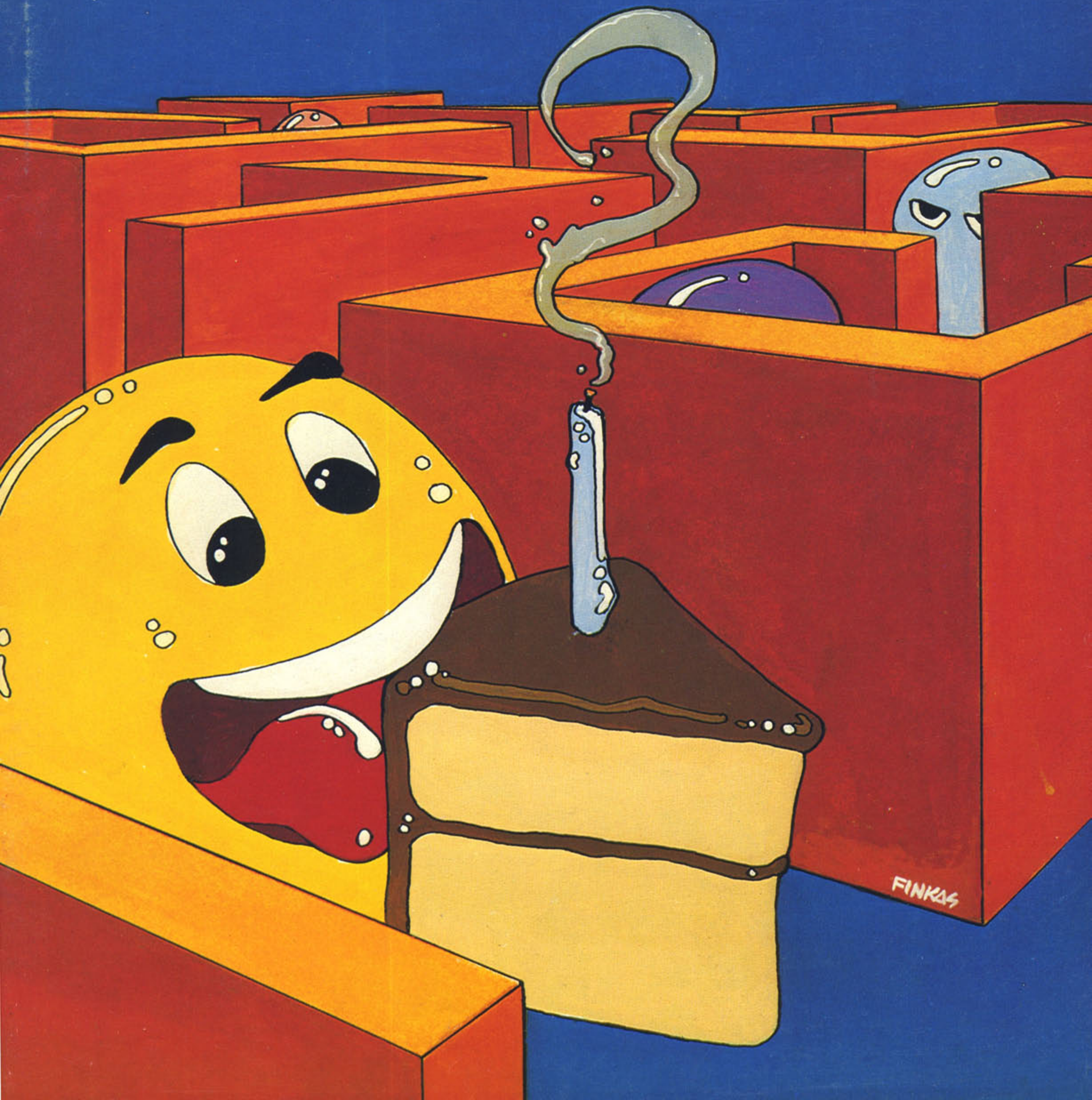
COMPUTER GAMING WORLD

VOL. 2 NO. 6

NOV — DEC 1982

$2.75



1985 WAS NOT A VERY GOOD YEAR. THE RUSSIANS INVADED GERMANY, STORMED THE PERSIAN GULF, ATTACKED NORWAY, AND OVERRAN THE BALTIC.



INTRODUCING OUR NEW SERIES OF WARGAMES:
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*The first four releases are **GERMANY 1985,™ RDF™** (in the Persian Gulf), **NORWAY 1985,™** and **BALTIC 1985.™***

Designed by Roger Keating, creator of SSI's highly-acclaimed SOUTHERN COMMAND,™ these strategy simulations boast the same successful look and play as his previous masterpiece: beautiful color graphic displays, easy-to-use movement system and realistic combat rules.

In GERMANY 1985, battalions of Soviet infantry, tanks, artillery units, and paratroopers have breached the southern center of West Germany through the Fulda Gap. NATO forces must contain and repel the Red invasion.

We've introduced several innovative rules to this game: Speed of movement is inversely proportional to the number of enemy units that can see you; smoke screens can be called upon to help cover an attack or retreat; and the concepts of HQ units, divisional integrity, and air superiority are fully incorporated.

For improved playability, the computer can actually move and fire for you. For example, if you wish to move from point A to B, simply order the computer and it will move the designated units along the most efficient path — stopping whenever enemy units are encountered. Or you can have the computer direct your artillery fire for you. In the solitaire mode, the computer can play either the Soviet or U.S. side.

GERMANY 1985 (at $59.95) is more than the standard bearer for our new series. Its rulebook contains all the rules for the rest of the line....which are priced at just $34.95 each! What you've got are four great modern wargames at unbeatable prices!

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SSI

STRATEGIC SIMULATIONS INC

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WRITE FOR A FREE CATALOG OF ALL OUR GAMES.

Menu

VOL. 2 NO. 6 **Nov. - Dec. - 1982**

From the Editor. . .

This issue marks one year that COMPUTER GAMING WORLD has been in existence. On the cover of this issue we take time to do a little celebrating and enjoy a piece of birthday cake. The past year has been dangerous, tense, and challenging. But most of all, it has been rewarding. The response of our readers and the industry in general are the "power pills" that have kept us going when the "ghosts" of problems have attacked us.

Each issue has increased quality and added features. This issue is no exception. In addition to new layout features, we have added another new column, MICROCOMPUTER MATHEMAGIC By Dr. Michael Ecker. Look for a regular Atari 400/800 column beginning in our next issue. Look for the STAR MAZE contest in this issue.

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COMPUTER GAMING WORLD Is published bi-monthly by Golden Empire Publications, Inc., 1337 North Merona St., Anaheim, CA 92805. Second Class Postage Paid at Anaheim, CA 92803

POSTMASTER: Send address changes to Computer Gaming World, P.O. Box 4566, Anaheim, CA 92803-4566

COMPUTER GAMING WORLD is available at game stores, computer stores, and through subscriptions. The subscription rate for one year (six issues) is $12.50. Canadian subscriptions add $5.00. Outside of United States and Canada add $14.00 (Foreign air). All payments must be in U.S. dollars, made by check drawn on a U.S. bank, Visa Card, Master Card, or money order.

Psalm 9: 1-2

We can be contacted on The Source (TCL920)

Our phone number is (714) 776-4979

Features

Departments



INSIDE THE INDUSTRY

by Dana Lombardy,
Associate Publisher Game Merchandising

Last time we looked at the top sellers as reported by 105 game and educational software manufacturers. Part of that same survey conducted for CGW asked for the total number of new titles each company introduced in 1981, the first half of 1982, and for which personal computers the programs were designed.

Nearly 500 new game titles and 150 new educational titles were introduced in 1981. Statistics we gathered for the first six months of 1982 show around 375 new game titles and 130 new educational titles have already been released —80 percent of last year's totals in just the first half of this year.

Some of the most prolific game publishers include:

Company	1981 New Games	6 mos. 1982 New Games
Adventure International	55	38
Atari Program Exchange	36	10
Instant Software	50	20
Dynacomp	40	80
Artworx Software	17	6
Creative Computing Software**	16	7
Sierra On-Line*** (formerly On-Line Inc.)	15	6
Commodore International	13	12
Orion Software Associates	11	5
The Programmer's Guild	11	5
Sirius Software**	10	7
Spectral Associates	10	15
Strategic Simulations*	10	2
Broderbund Software**	9	8
Automated Simulations***	8	8
Continental Software	8	0
Avalon Hill Microcomputer Games	7	12
CE Software	7	2
California Pacific Computer Co.**	7	2
Acorn Software	7	1
Quality Software	7	1
Synergistic Solar	6	2
Big Five Software	6	2
Hayden Book Company	6	2
United Software of America	6	2
Manhatten Software	6	0
Datasoft*	0	6
Avant-Garde Creations	4	4
Muse**	4	4
Texas Instruments	4	4
Computerware	4	2
Dakin 5/Level 10	4	2
The Software Toolworks	4	2
Discovery Games	4	0
Krell Software	4	0
Creative Software	2	4
K-Byte***	0	4
Gebelli Software	3	8
Med Systems	3	6
Sublogic Communications***	3	6
Datamost***	3	4
Synergistic Software	2	5
Picadilly Software	2	5

It should be noted that this chart does not rate the companies by their size. It lists them in order only according to the number of new game titles they introduced in 1981 and so far in 1982.

What this chart does indicate is that over 50 percent of all new game titles were published by just 10 companies in both 1981 and 1982. If you take the statistics from the top 30 manufacturers, they are responsible for 81 percent of all new game releases.

There is also no relationship between the number of releases and how many sales a firm's top game will do. *Indicates a company's top seller has moved 8,000 or more units since introduction. **Is a company whose hottest product has sold over 15,000 copies. ***Denotes a game with more than 25,000 sales since release date.

Some companies which only released 1 or 2 titles have had top sellers with more than 25,000 copies sold (Infocom and BudgeCo), or 15,000-plus in sales (Innovative Design Software, Sir-tech Software, Arcade Plus, and The Cornsoft Group).

Looking at the chart on what game software was designed for which personal computers there's a discrepancy between the number of new titles and amount of software published (500 versus 806 in 1981; 375 versus 732 so far in 1982). This is due to the fact that one title is often made into two or more versions for different machines. Also, some firms spent a large part of their effort converting old game titles to work on different computers so as a consequence, their new releases figures are not very impressive for 1981/82.

The following chart on amount of software published shows how the personal computers divide game software marketed. The "other" category includes the Commodore Vic, IBM PC, TI 99/4A, Sinclair ZX81, Xerox 820, and a few other machines.

It should be emphasized, that the market share in terms of percent of games made for a computer does not equal how many computers of that type are being sold; although there obviously is a relationship with how many consumers have those machines and the demand for games.

No matter which personal computer you own, the large number of software manufacturers are going to provide you with a variety of games for use on your particular machine.

Personal computer	1981 Game Releases	first half 1982 Releases	Market Share by % of Software
			1981/1982
Apple	231	191	28.6/26.1
TRS-80	202	134	25.1/18.3
Atari	175	178	21.7/24.3
Others	198	229	24.6/31.3
Totals	**806**	**732**	**100/100**

Letters

Dear Editor:

In "Software Piracy: The Slaying of a Hydra," (Sept.-Oct. '82), Roe R. Adams III exhibits tunnel vision. Neither the behavior nor the realization of those who steal programs is unique; everyday there are other individuals who violate moral values and rules and make elaborate excuses.

The "core of the problem" is not the cost of the software; it is the soft morality that accompanies the belief that others are not to be trusted and that moral codes may be violated if one feels put upon.

While teaching philosophy in a community college, I all too often heard students (and sometimes colleagues) trying to justify unethical acts by the argument that someone had treated them unfairly. One "ripped-off" an employer who demanded too much work; another cheated in the class of a teacher whose standards were too high; a third stole from a corporation whose policies were abhorrent, and on and on.

If the software publishers ask too high a price, there is a proper (decent, honest, ethical) response: don't buy the item. Publishers will then lower the price if they can or stop making the product if they can't.

There are too many unanticipated consequences of the reasoning Adams and others present. Apologists for software theft ("piracy" like "ripping-off" is a euphemism intended to evade facing what that act really is) are teaching youngsters growing up with computers that moral codes are irrelevant to the good life. That will come back to haunt us all, not just the computer-using community. We would all do well to recall Aristotle's words in the Nichomachean Ethics of the 4th century B.C.:

"States of character arise out of like activities. . . .It makes no small difference, then, whether we form habits of one kind or another from our very youth; it makes a very great difference, or rather it makes ALL the difference."

Leona Billings
Palo Alto, CA

ED. — Thank you for your refreshing letter. Refreshing in that discussions about the pros and cons of software piracy rarely produce such eloquent statements of the larger truth. The soft morality which you refer to is the outgrowth of the fact that so many computerists grew up in the age of situational ethics. Perhaps software pirates should stop and take note of the fact that ultimately moral and ethical codes should be based on transcendental realities rather than personal opinion.

—————

Dear Editor,

Enclosed is a check for back issues of CGW. The problem with your magazine is that it is TOO good! I loaned out issues 2.2 and 2.3 and never got them back. From now on I'll give the guys subscription forms.

I hope your magazine is doing well. I had the fortune (?) to be managing editor of a small magazine for over a year, and I know some of the problems you're running into. Keep up the good work!

I think you would do well to analyse/review the new SSI game "Battle For Normandy". Although I had to send my copy back due to a disk malfunction (it would not put up the correct characters after accessing the disk) everything else is manificent.

First, you can play against the computer or another person and save the game at any time (typical SSI stuff).

Much more intersting are the 'what if's?' You can set different parameters up for different strengths (supply, air power, sea power, etc.). This provides an almost unlimited method of handicapping a player. Playing a first time wargamer? Cut way back on your supplies and tactical air. It makes the game a challenge for both of you.

Another major improvement is that the displays of unit strengths, etc., can be adjusted to show up for a period of 1-9 seconds. This is a major advance in the field of computer gaming. It means that an experienced player does not have to suffer through. . .[a long display when a short peek is all that is needed]. . . to pick out the important part(s).

SSI is indeed making major advances in computer wargaming. They should be congratulated for putting these program enhancements in a 48K game.

Keep up the quality of CGW. I thoroughly enjoy each issue cover to cover.

Bruce M. Johnson
Buckeye, Arizona

Ed. — I'm glad to hear CGW is so popular in Buckeye. If a few more of your issues are "borrowed", we may have to start paying you a commission for subscriptions from Arizona.

Yes, CGW is doing well. It is growing so fast we sometimes have trouble keeping up. Our move to larger quarters and an increase in the staff will help us make CGW even better. We are a year old now and look forward to another great year of covering one of the fastest growing hobbies in the world.

The character set problem you mention in your comments on Battle For Normandy is related to the 10K ROM operating system in the Atari computer (I thus assume you are an Atari gamer). Early Atari computers that have the Revision A operating System Cartridge will not be able to run SSI's Battle For Normandy until they are upgraded with a Revision B Operating System. If you have no immediate plans to upgrade, you can return your old disk or cassette to SSI and they will replace it with a program that will run on Rev. A Operating Systems.

Although I would not classify the adjustable display in Battle For Normandy as a "major advance in the field of computer gaming", I agree with you that any attempt by any computer game manufacturer to make their games more "user friendly" is an advancement for the hobby.

—————

Computer Gaming World is moving!

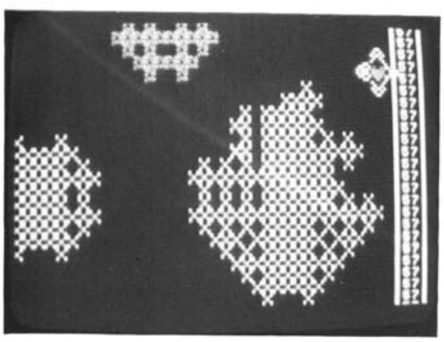
(see p.10)

Taking a peek

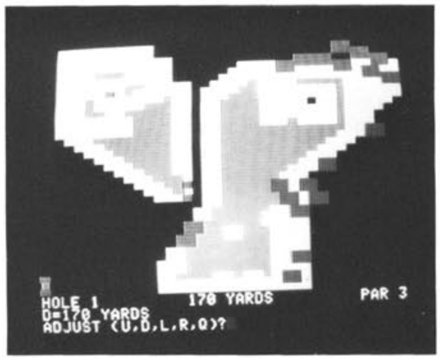
In addition to games mentioned elsewhere in this issue, the following products have been received by CGW. Some of these products will receive more detailed attention in future issues. Readers wishing to review any of these games should contact CGW.

Automated Simulations/Epyx
1043 Kiel Court
Sunnyvale, CA 94086

ALIEN GARDEN: A ROM Cartridge game for the ATARI 400/800 computer. In AG you guide your "Cosmic Critter" (it looks like something out of a Dr. Suess book) around a crystal garden. The "flowers" can grow, transform, or explode depending upon how you touch them with your critter. Although AG looks like an arcade game, it is actually a game of strategy. Your goal is to gain points by creating a multi-generation garden and eating your creation. Flowers begin the game in their first-generation form and can be transformed into 20+ generations. The more generations, the higher your score when you eat flowers. Atari 400/800.

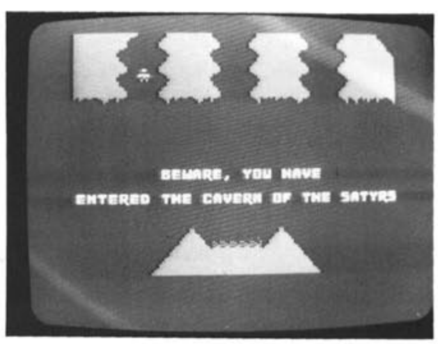


FORE!: A hi-res golf game which has two courses, a driving range, and practice field. Wind direction and terrain affect shots. FORE! along with HI-RES COMPUTER GOLF (Avant-Garde) are the two most popular golf games for the Apple computer. In comparing them we found both to be good games (in different ways). HRCG requires hand-eye coordinated swings which is much more challenging than simply hitting a key to make your stroke. Some gamers like this extra dimension. On the other hand, HRCG can be frustrating if you do not like the hand-eye sequence and/or want a relaxing beer-and-pretzel type game. HRCG is more for the involved golfer and requires several rounds of play to "master". FORE! is more easily "mastered" and can be played with relative skill by newcomers. We liked them both. Both run on the Apple (keyboard play) and retail for $29.95.



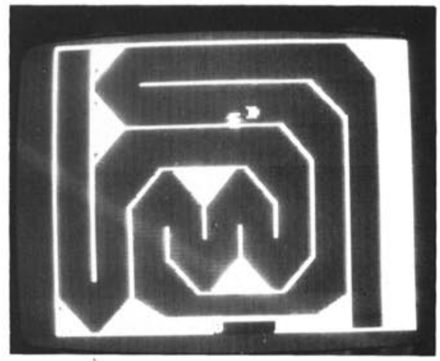
ESCAPE FROM VULCAN'S ISLE, CRYPT OF THE UNDEAD and KING ARTHUR'S HEIR:

Here are three games based on a common system. Using the Atari joystick you make your way around finding treasure, food, and other important items. All three of these adventure games involve travel through a variety of regions to accomplish your task. In ESCAPE Your task is to escape Vulcan's Isle. In CRYPT you try to escape from a cemetery. In KING ARTHUR you must return to Camelot. As will all Automated Simulation games, the rule books are well done. The games themselves will appeal to those who enjoy adventure games. Atari 400/800.



Avant-Garde Creations
P.O. Box 30160
Eugene, OR 97403

DEATH RACE '82: A hi-res arcade game in which you attempt to drive your turbocar through a series of 10 concrete road mazes. You attempt to outmanuever and/or outgun killer robots in Death Squad cars. Your weaponry includes a rear firing bazooka and an oil slick thrower. The killer cars have forward firing lasers. This game is somewhat unusual in that you steer your car by hitting the paddle buttons (0 for counterclockwise turns, 1 for clockwise turns). Apple II. $29.95.



FEDERATION: A "Defender" type game in which you are to wipe out defending forces on the enemy planet. You can fire lasers at enemy ships and drop bombs on planetary batteries. The screen scrolls left and right in this game which is played by keyboard. The movement of your ship is different than one might expect from a Defender type game. It is difficult to describe. Try playing the game before you buy if possible. Apple II. $29.95.



ZERO GRAVITY PINBALL: A pinball game without the effects of gravity. Rather than the traditional rectangular field in which the ball enters from the top and you try to overcome gravity through the use of flippers, ZGP is played on a square field and you attempt to keep the ball from flying out into space. Ten flippers guard the right and left exits of the playing field.

Continued on pg. 6



This advertisement has no headline!

Mere words fail to convey the excitement that is truly LEGIONNAIRE.

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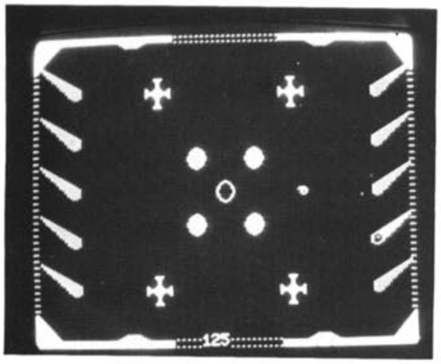
and ask for operator XXX, or write: Avalon Hill Microcomputer Games, Dept. 71, 4517 Harford Road, Baltimore, MD 21214. Please add 10% for postage and handling.

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SOFTWARE GAMES	With Cassette For:					With Diskette For:				PRICE
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Draw Poker		16K	48K	8K	16K					16.00
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Shootout at the OK Galaxy	16K	16K	32K	8K	16K					20.00
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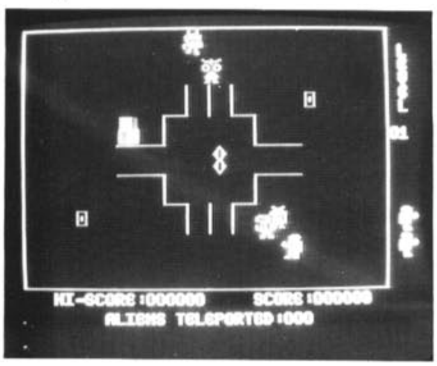
AH QUALITY **microcomputer games**®
A Division of the Avalon Hill Game Company
4517 Harford Road • Baltimore, MD 21214

Two force fields (keyboard activated) protect the upper and lower exits. As a game, ZGP is considerably different than other Apple pinball games. Apple II. $29.95.



Cavalier Computer
P.O. Box 2032
Del Mar, CA 92014

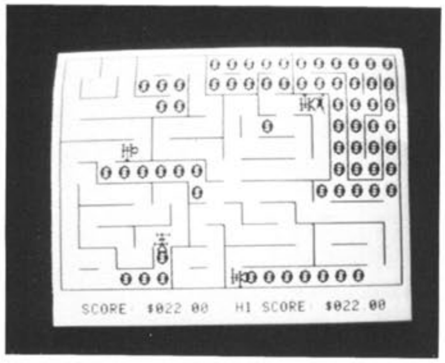
TELEPORT: A hi-res arcade game which can make use of a Votrax speech synthesizer. Without the synthesizer you hear music while you are playing. Teleport is basically a maze-chase game without the maze. That is, movement is allowed in the four cardinal directions as you make your way around trying to stun aliens without being run into by them. Once you stun an alien you must transport it through the infinity door (to its own dimension). Apple II.



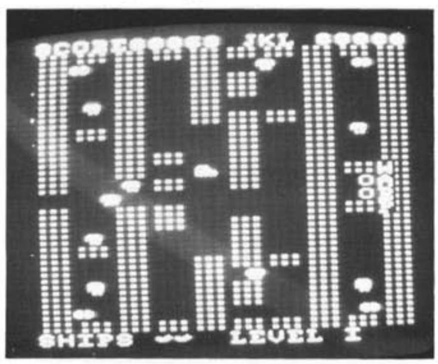
Datamost
9748 Cozycroft Ave.
Chatsworth, CA 91311

HOW TO WRITE AN APPLE PROGRAM
HOW TO WRITE AN IBM-PC PROGRAM
HOW TO WRITE A TRS-80 PROGRAM: Three books that in reality are one. Ed Faulk, the author, has written an introductory book on programming and issued it in three forms, Apple, IBM pc, and TRS-80. Faulk takes you through planning, designing, coding, testing, and documenting your program idea. $14.95 each.

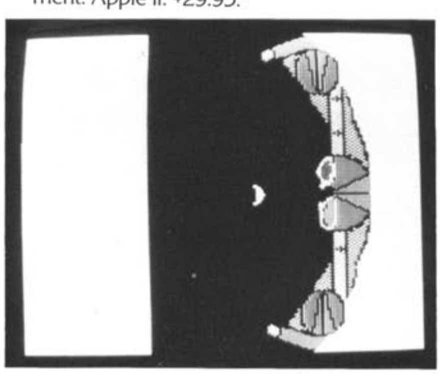
MONEY MUNCHERS: A maze-chase game by Bob Biship in which you try to grap money found throughout the maze. You compete against money munchers who not only wish to grab the money for themselves, but also can eliminate you if they catch you. At higher levels spiders and snakes also hinder you. Apple II. $29.95.



MARS CARS: In MC you attempt to make your way through 16 levels to the center of the planet Mars. Each level contains treasures which you must collect while avoiding the Mars Cars. The Mars Cars look like aliens and you, the actual alien, look like a car. You can crash through the barriers as you make your way through each level. The Mars Cars get more intelligent on each level as they guard their treasures and seek to eliminate you. Apple II. $29.95.

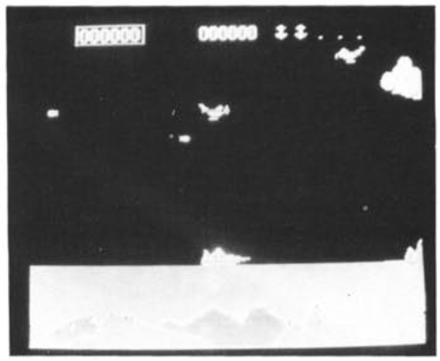


THAROLIAN TUNNELS: This game, bought by Datamost from The Software Farm, places the players in the role of an invading spaceship pilot. The game is broken up into four distinct parts: Combat with defenders above the planet; Maneuvering through tunnels (avoiding the walls); Combat with enemy ships in a large underground tunnel; and Navigating through lasers into a docking compartment. Apple II. $29.95.



Hayden Software
50 Essex St.
Rochelle Park, NJ 07662

KAMIKAZE: An arcade game in which you use a game paddle to maneuver your ship back and forth firing at enemy bombers. From time to time, one of the planes will attempt to kamikaze onto you. Mines also appear from time to time and must be avoided. The best thing that can be said about Kamikaze is that you can win up to $5000 playing the game! Details for the CONTEST can be found in the game package. Entry deadline is January 15, 1983. Apple II. $34.95.



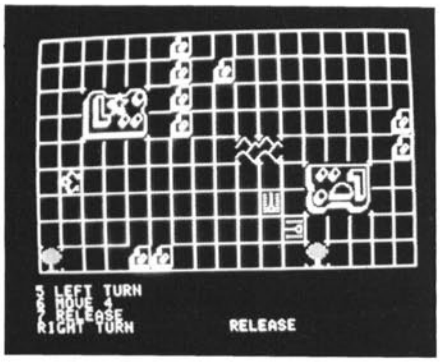
KLONDIKE 2000: The Martian Gold Rush Game. In Klondike 2000, you attempt to mine gold in the mines of Mars. (Wouldn't it be funny if a Mars car came along in the middle of your mining?) Robots guard the gold but you can win the robots to your side by feeding them crystal chips. The player who gains the allegiance of the most robots will harvest the most gold and win the game. Solo play is possible, but the game is really a multi-player game for up to four players. Apple II. $24.95.

SHUTTLE INTERCEPT: A Defender type game in which you pilot a space shuttle and try to intercept and capture earth satellites with your space hook. You are hindered by meteors and a variety of alien spacecraft. Apple II. $34.95.

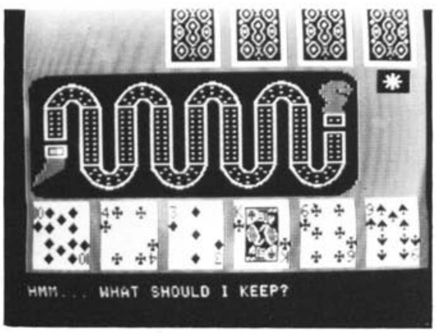


FINAL CONFLICT: A game of warfare between robot armies. Each side programs robots and then sends them out onto the battlefield. The game can be fast and tactical or thought-out and strategic. You can choose from a variety of terrain maps or semi-design your own battlefield.

Can be played by two players or one player versus the computer. Designed by Tom Cleaver (GALAXY, Avalon Hill). Apple II. $34.95.



KING CRIBBAGE: KC is a computerized version of the old English Card Game. KC allows you to play six-card cribbage against your Apple computer. All rules of tournament cribbage are followed. There is a special beginner's option which provides a simpler game. Apple II. $24.95.

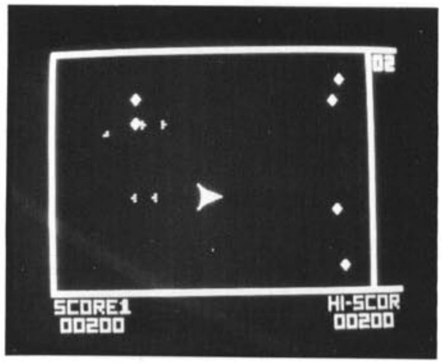


STAR TRADERS: A multi-player game of intergalactic profiteering. You compete other players to earn the largest profits from interstellar trading. The game can be played by from two to four players, each with one to three ships. The game alows multiple strategies and would be sure to make an good evening's gaming for several friends. Apple II. $19.95.



Muse Software
347 North Charles St.
Baltimore, MD 21201

FRAZZLE: A space arcade game in which you control a ship that drops Energy Probes to eliminate enemy vessels. You must avoid contact with the impenetrable force field while avoiding the ships. Frazzle looks like an Asteroids type game when first seen on the screen, but is much different. The game has a "flavor" all its own. Apple II.

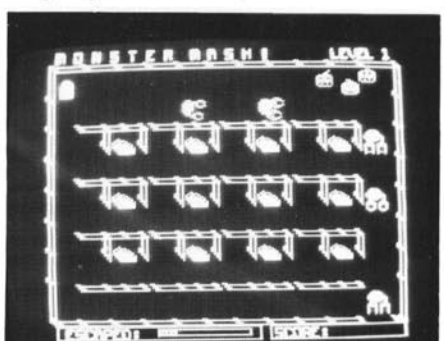


KNOW YOUR APPLE: This product, packaged in an Apple II shaped box, introduces the Apple II to the beginning computerist. Separate programs (accessed from the main menu) teach the beginner basic information about the monitor, keyboard, disk drive, ROM, RAM, 6502 processor, etc. Although it is too elementary for someone who has been working with his Apple for any length of time, it is a program that can be valuable to the beginner when he first sets up his system. It is a nice showcase program as well. Apple II.



The Software Farm
3901 So. Elkart
Aurora, CO 80014

MONSTER MASH: An arcade game in which you attempt to keep monsters in a graveyard and mash them with headstones

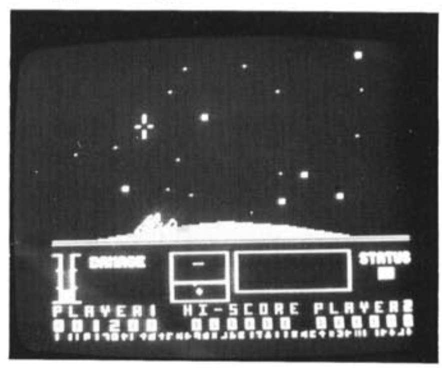


(no kidding!). By manipulating gates and headstones you seek to destroy monsters and protect visitors. The first level is very simple. Other levels increase difficulty (especially if you use the independent control option). If possible, play it before you buy. Apple II. $29.95.



Piccadilly Software
89 Summit Ave.
Summit, NJ 07901

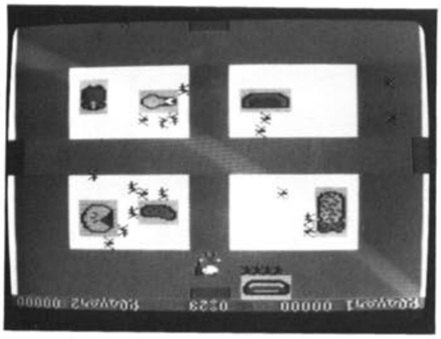
WARP DESTROYER: A well-designed game of space combat that utilizes a number of screens and tasks. If you successfully make it through the hyper-space sequence you are faced with a series of planetary defenses (mines, fighters, probots, enemy base). If you destroy them all you go on to the next enemy planet and begin again. The screen scrolls left and right as you look out from your cockpit. A nice 3-D effect is achieved with your shots receding in the distance and enemy shots growing larger as they approach. Apple II.



Synapse Software
5327 Jacuzzi St., Suite I
Richmond, CA 94804

PICNIC PARANOIA: An arcade game for the Atari. A variety of insects attempt to ruin George's picnic. You control George as he swats ants,. spiders, and wasps. The ants attempt to cart off your food. The wasps attempt to sting you, and the spiders bite and spin webs. While swatting insects you will also be attempting to move food items back onto the tables (you've killed the ants that were about to get away with the food). Points are awarded at the end of each round for food

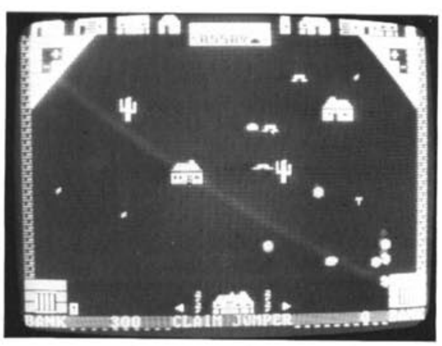
still left on the table or only slightly moved (i.e., on the grass but not out of sight. Atari 16K (disk or tape) $34.95



PROTECTOR II: An improved version of Synapse's PROTECTOR. A Defender type game in which you must rescue the populace (the volcano is about to erupt) and move to a safe place. Then you can assault the enemy base. The new version allows you to pass in front of buildings and them shoot while carrying people to safety. Other improvements as well. Atari 32K (disk and tape) $34.95.



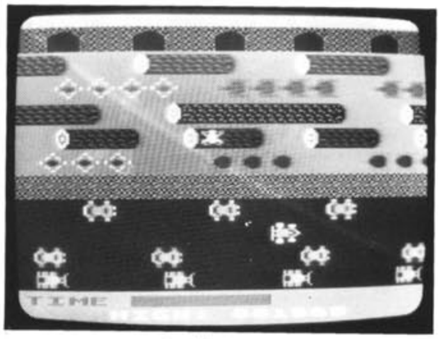
CLAIM JUMPER: A nice two-player interactive game (solo play is possible). Set in the gold rush days, your task is to pick-up gold and take it to the Assay office; collect your money and deposit it in your bank. Unfortunately your opponent can and will try to steal your gold, or shoot you, or both. Atari 16K (disk or tape). $34.95.



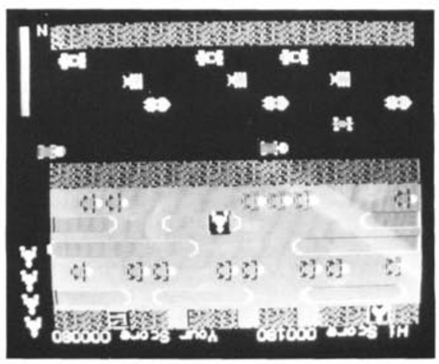


Sierra On-Line, Inc.
36575 Mudge Ranch Road
Coarsegold, CA 93614

FROGGER: Sierra On-Line produces The Official Frogger by Sega®. Both are good reproductions of the coin-op game in which a frog attempts to cross a busy highway, a dangerous river, and arrive safely on the other side. When you compare the ATARI version and the APPLE version it is apparent how much better the Atari computer system is for sound and graphics. The Atari version is just like the coin-op game in sight and sound. The Apple version plays like the coin-op game, but its graphics and sound are inferior due to the limitations of the machine. The Atari version (on disk) requires 32K. It also comes on tape. The Apple version requries 48K. $34.95.



Atari Version



Apple Version

Strategic Simulations
465 Fairchild Dr., Suite 108
Mountain View, CA 94043

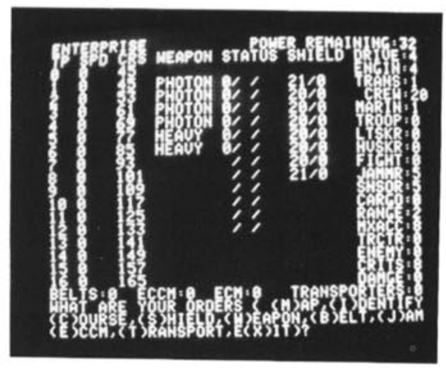
BATTLE FOR NORMANDY: Designed by Tactical Design Group (Battle of Shiloh, Tigers In The Snow) BFN covers the D-Day invasions. SSI is releasing this one simultaneously for the Apple, Atari and TRS-80 (disk and tape versions available. $39.95.



The Atari Version

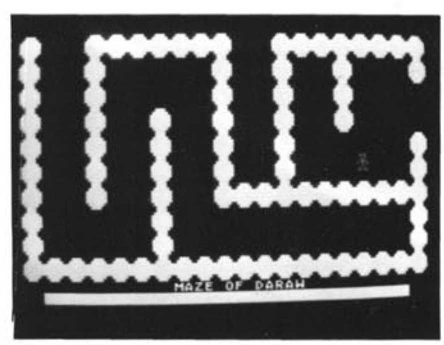
S.E.U.I.S.: Shoot 'Em Up In Space is called "A Spacegamer's Toolkit." You build ships from a choice of six prototypes. S.E.U.I.S., by John Lyon, bears some resemblance to John's popular SHATTERED ALLIANCE game. A strategic game sequence creates the individual battles that are fought by your created squadrons. Actual battles are fought in arcade type action. Apple II. $39.95.

THE COSMIC BALANCE: A tactical space combat game by Paul Murray that is similar but much better than his popular THE WARP FACTOR. TCB allows you to construct your own ships. A strategic-level version of TCB will be released at a later date. Using both games, you will be able to set up complex campaign games with two or more players. Apple II. $39.95.



Dynacomp, Inc.
1427 Monroe Ave.
Rochester, NY 14618

VALLEY OF THE KINGS: A graphic adventure game for the Atari. Actually three adventures in one; you must successfully complete each of three different passages to win. Along the way you seek treasures, keys, weapons, etc. Atari 48K. $29.95.





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COREY WOLFE

Hobby & Industry News!

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COMPUTER GAMING WORLD
P.O. BOX 4566
ANAHEIM, CA 92803-4566

Our business offices and shipping address will be:

1337 North Merona St.
Anaheim, CA 92805

The Cornsoft Group (6008 N. Keystone Ave., Indianapolis, IN 46220), in association with SEGA Enterprises and Sierra On-Line, has produced the official **FROGGER** for the TRS-80 Model I and III. According to Cornsoft, the actual Frogger music and sound effects have been incorporated into the TRS-80 version.

Hayden Publishing Company has announced the formation of the **HAYDEN SOFTWARE COMPANY.** The president of the new company is Oscar Ray Rodriguez. Mr. Rodriguez was previously the president of American Business Systems.

Hayden Software Company (600 Suffolk St. Lowell, MA 01853) is sponsoring a contest based on HSC's first arcade release, **KAMIKAZE**. Finalists will be flown to San Francisco for the finals. The winner will take home $5,000. Details are included in the Apple II game which sells for $34.95.

Edu-Ware Services has released the second game in their EMPIRE Gaming Trilogy; **EMPIRE II: INTERSTELLAR SHARKS.** The trilogy will be completed by **EMPIRE III: ARMAGEDDON** which is scheduled for a February 1983 release. All three games run on the Apple II. Interstellar Sharks sells for $32.95.

Broderbund Software of San Rafael, CA announces **THE ARCADE MACHINE CONTEST.** Purchasers of The Arcade Machine, a do-it-yourself arcade design package, can win prizes up to $1,500. Starting January 31, 1983 and every month thereafter through June 30, 1983, Broderbund will select a game designed using their TAM program as a finalist. The finalists will be eligible for the Grand Prize of $1,500 worth of software or hardware. The runner up will get $500 worth of prizes. Details are in The Arcade Machine documentation or may be obtained by writing or calling Broderbund Software, 1938 Fourth St., San Rafael, CA 94901, (415) 456-6424.

Broderbund has released two of its Apple games for the Atari 400/800. **DAVID'S MIDNIGHT MAGIC** pinball game (see issue 2.2) requires 48K (disk). **GENETIC DRIFT** (see issue 2.1) requires 32K for the disk version and 16K for the tape version. DMM sells for $34.95. GD sells for $29.95.

BOMB ALLEY, Gary Grigsby's game on Malta and the Mediterranean, will be out at the beginning of December. It will be an Apple game. Gary will begin work soon on a game for the **ATARI 400/800** based on WWII carrier combat. Don't be too anxious, it will be months before we see it. He will also be working on his **NORTH ATLANTIC SEA MODERN NAVAL** game.

SSI will be flooding the **ATARI 400/800** market in the next weeks with several titles, **CYTRON MASTERS** (disk and cassette), **GALACTIC GLADIATORS** (48K disk), and **THE COSMIC BALANCE** (48K disk). The Atari version of **COMPUTER BASEBALL** is up in the air. Don't expect to see it for a while. The **IBM PC** version of **THE WARP FACTOR** has been delayed and will now be out by Christmas, "hopefully". On the other hand, the PC version of **TIGERS IN THE SNOW** should be out by December 1. It will require the color graphics card, 64K, and cost $39.95.

The updated **COMPUTER AMBUSH** for the Apple is back in the production cycle — "could be out in January" says SSI President Joel Billings.

Two other game projects at SSI are **GALACTIC ADVENTURES** and **EPIDEMIC**. GA will be a two disk adventure game based on the universe found in GALACTIC GLADIATORS. In EPIDEMIC (48K APPLE and 64K IBM PC) falling meteorites spread epidemics throughout the earth. Your job is to stop the epidemics. Look for both games in December.

The Grand Stand Company (4231 Bluebell Ave., Studio City, CA 91607) has released a furniture quality **JOYSTICK FLOOR STAND**. The stand is designed to eliminate wrist and elbow fatigue as well as improve finger dexterity. It can be adapted to any popular joystick. The basic wood version sells for $34.95.

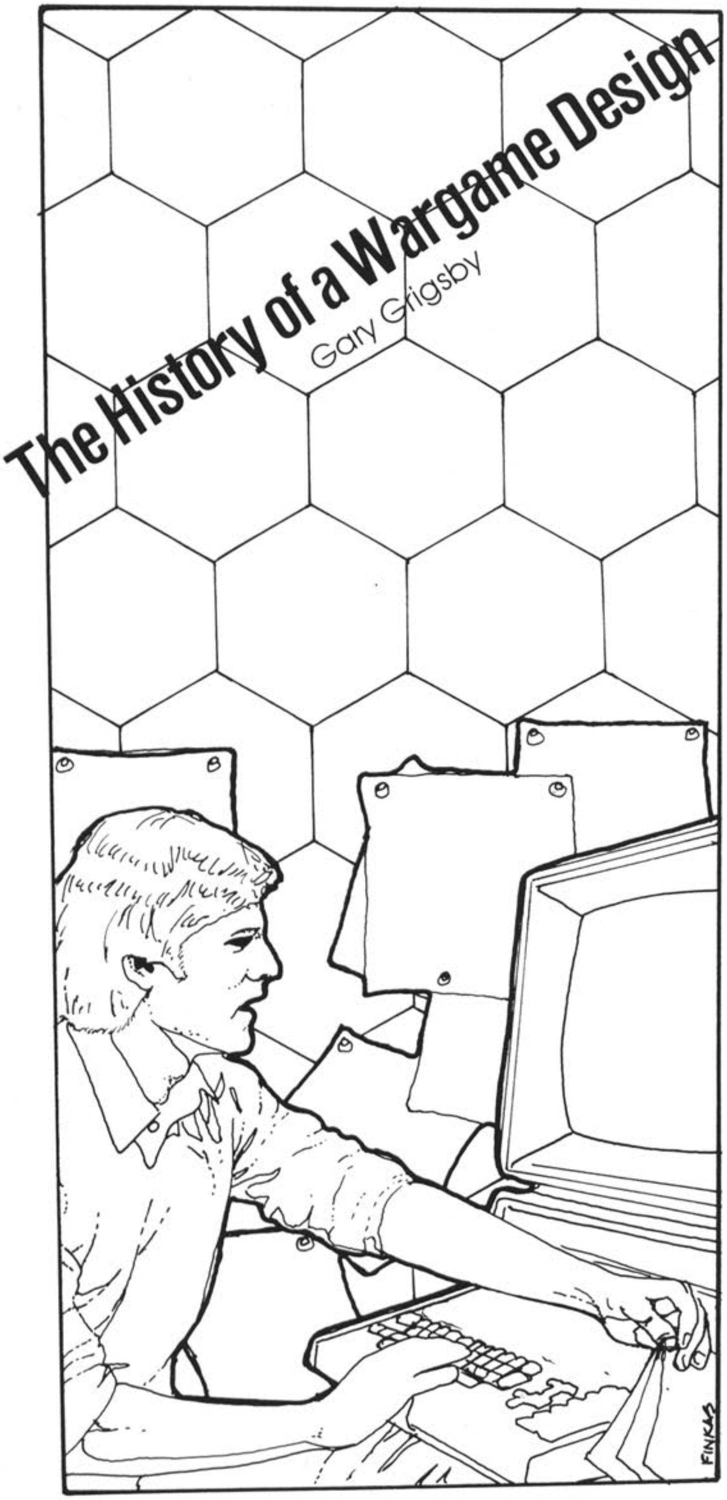


CORRECTION

In referring to the game **RENAISSANCE** and **AMOK** (Vic-20) on page four of our September — October issue, we incorrectly referred to the manufacturer as United Microwave Industries. The correct name is UNITED **MICROWARE** INDUSTRIES (3503—C Temple Ave., Pomona, CA 91768.) We said that RENAISSANCE, while basically a one-player game, can be played by two players. The game itself does not have a two player mode. However, through the use of a game utility, you can play the game between two humans. It simply requires that you request a "change of sides". In this manner the computer will relinquish each turn to the human players.

The History of a Wargame Design

Gary Grigsby



Guadalcanal Campaign *by SSI has in the fewweeks that it has been out proven to be a most popular program. The author of the game tells us in this article the history of his design from conception to royalty checks.*

In board wargames the classic "trade-off" was always detail and realism vs. playability. In computer wargames the trade-off has changed; detail and realism vs. *programmability*. GUADALCANAL CAMPAIGN (GC) includes as much detail and realism as programmability would allow. Detail conscious gamers can and will site numerous examples of how realism was sacrificed in some areas. I am sure, however, that most gamers will agree that GC is the most detailed (by sheer volume) computer wargame on the market.

The intimidating length of GC (294 turns) made playability the number one design priority. The program tells the players what to do and when to do it so that they can concern themselves with strategy instead of mechanics. The ease of play allows even non-fanatical players to finish the full game in one or two weeks without being burned out.

GC has some obvious faults or "trade-offs" which should be explained. The low resolution graphics were a first for SSI and were accepted with considerable reluctance. A hi-res screen requires 8K of program memory and, with the mountainous data files and programming involved, there simply wasn't 8K to spare. To accommodate a hi-res screen, the larger programs would have had to have been broken into many smaller programs and tied together with a tedious chaining system. The increased chaining would have meant a considerable increase in player *waiting* time (one minute of chaining per turn equals five hours of chaining per campaign).

Another "trade-off" was the language used to program the game. In the words of one programmer/author, "No great paintings were done with crayons — no great programs are written in BASIC." Alas, my keyboard is crayon stained; GC was written in BASIC. However, it was not the author's objective to design a "great" computer program. It was the author's objective to design a "great" wargame using a well-organized and *functional* computer program.

HISTORY OF THE GAME

The idea for GC came from a board wargame. A friend and myself had struggled through several weeks of SPI's SOLOMONS CAMPAIGN. I hated the confusing rules and tedious bookkeeping but the concept of a campaign level game with interaction of land, air, ship and sub units was fascinating. It was clear that the computer could allow much greater detail in describing the ships and planes involved, while solving all of the rules and bookkeeping hassles.

In computer programming there is a large amount of work between the initial idea and the finished product. The psychological momentum required to just get started can be the greatest problem. For six months I kept GC in my head; occasionally tinkering with the lists of variables and subprograms which would be required for the game. Finally, in December of 1981, these vague ideas jelled into a firm plan of action. It was time to take the plunge.

Completing the first version of GC required a month of total immersion in the project. It took roughly a week to write the program out on paper, a week to exhaustively research the forces involved, a week to punch the programs and data into the computer and a week to make it all (sort of) work.

Much of the credit for researching the game must go to Mr. Allyn Nevitt. Allyn, a close friend, is quite an authority on the Japanese Navy. He allowed me free use of his personal reference library which contained the information needed to rate the game's 293 ships. He also compiled a list (using Japanese language sources) of each Japanese destroyer that participated in the campaign and included their date of arrival.

In the early weeks of January I weeded out the last of the "bit bugs" in the program and started to have fun with my new toy. The newly completed program consisted of one BASIC program (109 sectors long) and one data file (52 sectors long). As the month progressed, I added mini-games for the battles: Eastern Solomons, Santa Cruz and Guadalcanal. The additional programming required to control the mini-games also produced the games first OUT OF MEMORY error. Condensing the program solved the immediate problem but the memory limit brought further development of the game to a screeching halt.

Briefly, I turned my back on GC itself but not on the GC game system. In about two weeks of research and reprogramming I was able to adapt the Guadalcanal System to the Mediterranean theater of operations in a game I called MALTA CONVOY. At last my enthusiasm for programming was exhausted; after two months of living and breathing naval history I was ready to return to the real world.

FINDING A PUBLISHER

I bought my first computer in May 1979 with the specific intention of designing wargames. Since that time I have designed several computer wargames and as my programming confidence grew, so did the desire to share my games with the world (or even cash-in on them). Unfortunately, I had no idea who would be interested in buying or marketing such a product. I knew that SSI and Avalon Hill were doing similar work: but they were faceless corporations in faraway lands.

In February of 1982 SSI got a lot closer.

On the 9th, I took time off work for a dental appointment. Upon arriving at his office, I was relieved to learn that the dentist was out sick for the day. I spent the remaining hours of my sick leave browsing the local computer merchant where I splurged my dental money on SSI's **TORPEDO FIRE** game. (Spending $60.00 for a *game* hurt almost as much as my root canal). That night I enjoyed several rousing submarine battles but was totally frustrated by an apparent malfunction in the *save-game* routine. When one pays $60.00 for a game, one expects near perfection. The next day I called SSI to complain of my misfortune. Joel Billings, calmly and patiently explained what *I* was probably doing wrong. When that problem was solved I changed the subject and asked: ". . . by the way, I design computer games, would you be interested. . ."

In the brief conversation that followed I learned that SSI obtained over 75% of their games from independent designers and that they would be glad to look at any of the games I cared to submit (business had been slow despite my $60.00 infusion). In the course of the conversation Joel mentioned: "We're using a customized disk operating system (RDOS) that uses 4K less memory (Great!) and chains three times faster" (Chains?)

At the time, I really didn't know what chaining was, but I could tell from the way Joel talked about it that it must be important. I found the answer on page 171 of the *Apple DOS Manual* "To run a *series* of Applesoft programs without erasing earlier values of variables and arrays use the following procedure. . .". Chaining allowed me to break out of the 48K straight jacket that had cramped the development of my computer games. I could now write 100K or even 200K games.

For two weeks I exchanged legal documents with SSI. At the same time I sent SSI a list describing four of my wargames. Having a strong feeling that GC would attract the greatest interest, I wasted no time in polishing the game for its first "showing". By the time Joel called to give GC the green light, I was certain that GC was a *finished* product — Silly me!

FURTHER DEVELOPMENT

Joel's first response after receiving the game was that it had lots of potential. I could tell from our discussion that he was enthusiastic about GC, but a couple of his suggested changes were real bomb shells. First, he said that I would probably have to switch over to hi-res graphics. Second, all SSI games must have "solitaire capability".

From the start I had a bias against hi-res graphics. Functional lo-res graphics fit neatly into my program and were fairly easy for players to read and understand. Hi-res graphics would require breaking the large programs into many little programs with significantly increased chaining. I realized that if properly done, the hi-res map would look much nicer. However, as the graphics played a relatively small role in the game, I really hated to butcher the program. Luckily, after much analysis, SSI came to share my conclusion.

My only previous experience at programming artificial intelligence into a wargame was for a modern tactical submarine game. For this the logic was simple: point the sub at the target and fire the torpedo. With homing torpedoes, I didn't even have to worry much about geometry (angles of intercept). For solitaire GC, the computer would have to: (1) decide how and when to form Task Forces (which ships to use & what mission to assign); (2) how and where to move each TF to best accomplish its mission; (3) which planes should be used for CAP or Search and which should be held back for air-strikes; (4) assign target priority to sighted enemy TFs and; (5) know when to launch non-suicidal land attacks.

The artificial intelligence for GC was easily the most fascinating challenge of my programming career.

Returning to my "total immersion" style of programming, I spent four sleepless nights and one lost weekend feverishly molding my new creation. In less than a week, GC was transformed from a fancy bookkeeping program into a living creature. Upon completing the artificial intelligence program *GUADABRAIN*, I no longer had any doubt that GC could be successfully marketed.

Writing the rules to GC was two weeks of sheer drudgery and the undisputed low point of the whole project. It is much easier to tell a computer how to do something than it is to tell a human how you told a computer how to do something. Describing the human requirements for playing the game would have needed only two pages. Describing what the computer was doing when the human player was just watching required an extra 18 pages.

With the completion of the rules, the game was shipped out to the independent playtesters. A few weeks later I started receiving the first playtester comments in the mail. These letters would inevitably start out:

"I think your game is great, but. . .", and proceed to list four or five pages of suggested changes. Since I had been convinced the game was perfect the volume of criticism put a strain on my ego (especially since most of them were valid). In all, about 60% of the suggestions resulted in some change in program. Another 20% were valid criticisms that could not be answered due to programmability problems. The playtesters were, as a whole, extremely knowledgeable and their suggestions contributed much towards polishing the game for which I thank them.

The last major change came when Joel suggested that I add a "short" campaign scenario to the game (Oct. 1-Dec. 31, 1942). This would not have required any major effort, were it not for the fact that the disk was already full. The solution was a major reorganization of the data files which would allow *Campaign I*, *Eastern Solomons*, *Santa Cruz* and *Guadalcanal* to all share the same data. These changes came after the major playtest effort and, as a result, one minor bug survived after the game went on sale (CA-Quincy was sunk in the battle of Savo Island on 9 August 1942, however her ghost can be seen prowling the harbor at Espiritu Santo in the Santa Cruz scenario).

After several other frantic last minute changes, GC was finally declared to be completed just in time for its debut at Origins 82 (held in Baltimore last July). GUADALCANAL CAMPAIGN had been the center of my life for over eight months; and I was now ready for some R&R (Royalties and Reviews). ■

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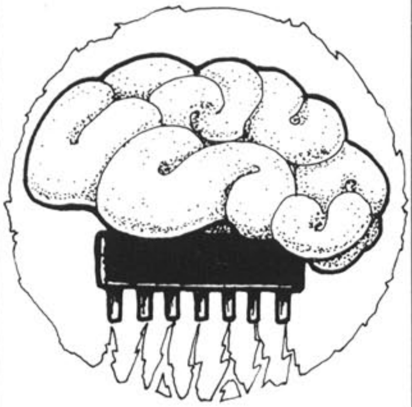
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THE SILICON CEREBRUM

by Bruce Webster

APOLOGIES

Before getting into this column's topic, I need to issue a number of apologies. First, I want to apologize for not having a column last issue. Second, to apologize for not covering in this column what I said would be last time. And most of all, I want to apologize to all of you who took me up on my rash offer and wrote for program listings of the algorithm. I really do plan to reply to all of you and to write the promised column. During the last three months, I have changed jobs, changed houses, and have been working under a number of deadlines which have left me little time for doing this column (or many other things). Most of the pressure should be off within a few weeks, so I should be able to get back to these unfinished matters.

A DECISION MAKING METHOD

A few years ago, while working on a master's degree at the University of Houston/CLC, I took a course on pattern classification — a major topic in artificial intelligence. The very first topic covered was *Bayes Decision Theory* (BDT). Simply put, BDT helps you to make a decision based on your current information. It does this using probabilities, risks, and benefits, while seeking to minimize the risk and maximize the benefits. BDT works with the following assumptions:

(1) There are N things — $\omega(1)$ through $\omega(N)$ — to recognize. What these "things" are depends upon the application; they could be objects, situations, formations, etc. I'll call these "events".

(2) There are P actions — $a(1)$ through $a(P)$ — which we can take. Again, what those actions are depends upon our situation.

(3) There is a set of $N*P$ loss values — $L(1,1)$ through $L(P,N)$ — which represent the loss incurred by taking a given action when a particular event exists. For example, $L(j,k)$ represents the danger of taking action $a(j)$ if the event is $\omega(k)$. The loss values are greater than or equal to zero, with a value of zero indicating no danger at all. We'll call this the loss table.

Given just this much, we can quickly work out a scheme for choosing an action:

(1) Identify the event, which we'll call $\omega(k)$;
(2) Look at $L(i,k)$, i= 1 to P, and find the lowest value, which we'll call $L(j,k)$;
(3) Perform action $a(j)$.

All we're doing here is finding the least dangerous action given a certain event. If two or more actions have the lowest loss values, then we can use some method to pick one: random selection, priority, or another decision function. If we wish, we can build the priority into the loss table. As we have to precompute the entire table, it can be made certain that, for each event, no two actions have the same loss value.

There are some variations on this method, most of which involve substituting some other function for the loss table. For example, we might define a gain table ($g(P,N)$) where 0 = no gain and larger values mean more desirable outcomes. We would then search for the highest value, instead of the lowest. This really isn't that much different from a loss table, but you may prefer the optimistic approach. A more sophisticated method would be to substitute an evaluation function, *eval* (j,k), which uses the current game situation rather than a precomputed table to determine the gain/loss of choosing a particular action given a certain event.

BAYES DECISION RULE

All of this is very simple if you always know what the current event, $\omega(k)$, is. Ah, but do we always know? It is one thing for our program to recognize that it is facing a given type of opponent and direct its actions appropriately. It is quite another to recognize a course of action, strategic formation, or some other hard-to-define event. That's where the tricky stuff, namely *probability*, is needed. A few more terms must now be defined.

(1) We will lump all of the variables, etc., that might help us to identify the event into the collective term, X. X is known as a *feature vector*.

(2) We will use the expression $P(a)$ to represent the probability of A, where $0.0 <= P(A) <= 1.0$. A probability of zero means that A can never happen, while a probability of 1.0 means that A always happens.

(3) We will use the expression $P(A:B)$ to represent the probability of A given that B exists/has occurred/etc. This is called *conditional probability*.

Our goal, given X, is to identify the events with which we are dealing. The Bayes decision rule tells us to pick the event, $\omega(k)$, with the highest probability, given X. In other words, we want to pick $\omega(k)$ such that

$$P(\omega(k):X) > P(\omega(i):X),\ i,k = 1 \text{ to } N,\ i <> k.$$

(As before, we may need a tie-breaking method in case there are some identical maximum probabilities.)

The problem, of course, is coming up with a value for $P(\omega(i){:}X)$. We are not entirely without help. The Bayes rule tells us that

$$P(\omega(i){:}X) = P(X{:}\omega(i)) * P(\omega(i)) \ / \ P(X).$$

At first glance, this appears to be even more of a mess, for we now have to come up with three sets of values instead of one. But this is where the "intelligence" in our method is required. The value $P(\omega(i))$ is based on observation of the game. Let's, for example, suppose that $\omega(i)$ represents a type of ship that we might face, and that there are three types of ships (N=3). If there is an equal number of each type of ship, then

$$P(\omega(1)) = P(\omega(2)) = P(\omega(3)) = 0.333.$$

If, however, there are five ships of type *1*, three of type *2*, and one of type *3*, then

$$P(\omega(1)) = 0.5,\ P(\omega(2)) = 0.3, \text{ and } P(\omega(3)) = 0.2$$

There are two important rules to remember in assigning these probabilities. First, the set $\omega(1)$ through $\omega(N)$ must define *all cases*. Second, all the probabilities must add up to 1.0, or

$$sum[P(\omega(i)),\ i= 1 \text{ to } N] = 1.0.$$

The second value, $P(X{:}w(i))$, is based on analysis and (possibly) test cases. A very simple example should help to illustrate. Let's suppose again that we are trying to recognize one of three ship types, and that X is just a single variable that represents the size of the ship. The ship types may have the following sizes:

Ship type (ω)	Sizes (X)
1	1,2,3
2	2,3
3	3,4

Let's suppose that observation/game design/whatever leads us to believe that the ships are divided among the different sizes as follows:

Sizes (X)	$P(X{:}\omega(1))$	$P(X{:}\omega(2))$	$P(X{:}\omega(3))$
1	0.5	0.0	0.0
2	0.333	0.333	0.0
3	0.167	0.5	0.167
4	0.0	0.167	0.833

We're defining what percentage of a given ship type falls into each size category, so the values must account for all ships and each column add up to 1.

The third value, $P(X)$, can be computed, but we don't need to bother with it. Why? Well, what we are trying to find is the maximum value of

$$P(\omega(i){:}X) \text{ for } i = 1 \text{ to } N.\ P(X),$$

however, is the *same* for *all values* of *i*, so it has an equal influence on all of the values and is therefore unimportant. However, if you really want to calculate $P(X)$, use the expression

$$P(X) = sum[P(X{:}\omega(i))*P(\omega(i)),\ i =1 \text{ to } N].$$

When you put this all together, what you are actually doing is finding the action, $a(j)$, with the lowest associated risk, $R(j)$, given X. The method described above doesn't involve directly computing $R(j)$, but if you did want to compute it, here's the expression:

$$R(j) = sum[L(j,i)*P(\omega(i){:}X),\ i =1 \text{ to } N].$$

AN EXAMPLE

To see how this all fits together, let's continue with our example of the three types of ships. When a ship is encountered, we have to choose from three actions: *fight*, *negotiate*, or *flee*. Our goal is to destroy as many ships as possible before ours is destroyed. Our ship is of type *2*; type *1* is weaker and type *3* is stronger. Here are our attack odds:

Ship type	Enemy dest.	Both dest.	Us dest.
1	0.666	0.333	0.0
2	0.333	0.333	0.333
3	0.0	0.333	0.666

If we choose to negotiate, there is a 50% chance that the enemy ship will not attack. Let's build an ad hoc loss table:

Ship type	Attack	Negotiate	Flee
1	4	6	5
2	5	5	5
3	6	6	5

As this is set up, we will always attack a type *1* ship and always flee a type *3* ship. We will use some sort of decision function for deciding what to do with a type *2* ship; for now, we'll just randomly choose between attack, negotiate, and flee.

A side comment: you may wonder why "flee" has a loss value. the reason is simple. Our goal is to destroy ships. If we assigned "flee" a loss value of 0 for each ship type, then we would always flee and, therefore, would never destroy anything. If, on the other hand, we assigned "attack" a loss value of 0 for each ship type, we would always attack. This means, of course, that the way our ship acts during the game can be changed just by modifying the values in the loss table. Getting any ideas?

We'll assume that X has the values defined above and that

$$P(\omega(1)) = 0.5,\ P(\omega(2)) = 0.3, \text{ and } P(\omega(3)) = 0.2.$$

We can then build a table of what we will do for each value of X.

X	$P(\omega(1){:}X)$	$P(\omega(2){:}X)$	$P(\omega(3){:}X)$	*type*	*action*
1	1.0	0.0	0.0	*1*	attack
2	0.625	0.375	0.0	*1*	attack
3	0.313	0.562	0.125	*2*	select
4	0.0	0.232	0.768	*3*	flee

(Incidentally, the values above do use $P(X)$. I did this so that the probabilities going across would add up to 1. Had I not used $P(X)$, then each row would have added up to $P(X)$.)

CONCLUSIONS

When you think about it, BDT is really based on common sense. To identify the event, you pick the most likely candidate, ($\omega(k)$) given the pertinent information (X). Once you know (or have guessed at) the event, you pick the action ($a(j)$) that results in the smallest loss ($L(j,k)$). The challenge with BDT is to come up with useful values for $P(\omega(i))$ and $P(X{:}\omega(i))$. For microcomputers, there are the additional challenges of execution speed, data storage, and program size. But that's why programmers get paid (they do get paid, don't they?).

Next issue, I hope to have the weighted map diagrams I promised two issues ago, along with a few example listings of the weighting algorithm. And, I hope to finally have my backlog of letters cleared out. ■

REAL WORLD GAMING

Dan Bunten



In the previous installment of this column, I listed the main phases in the development of a game which simulates a "real world" field of interest. They are:

1) System Definition
2) Data Collection
3) Model Development
4) Programming
5) Play Testing

We covered the System Definition Phase last time. This phase being mainly the mental exercise of organizing your thoughts about the proposed game. So, having rummaged around in your head for a while, it's now time to get some other parts of your anatomy involved. Let's get your hands dirty and your feet wet by beginning the *Data Collection Phase.*

Depending on your outlook, data collection can be either the most boring or the most interesting aspect of simulation game design. People who enjoy taking the slippery and fuzzy elements of life and "pinning them down" with decimal points will love data collection. But, those who would rather appreciate nature than name it, will hate data collection. For the second group, describing the world in numeric terms destroys its magic. Those of us in the first group, however, appreciate the power of math to capture the abstractions of life in predictive equations. It's exhilarating to take the working essence of a vague process and capture it in a computer.

In order to have decided on a certain theme for your simulation game you've already done some informal data collection. This form of data collection would be more properly described as "observation". Studying and observing your field of interest is so implicit to deciding to develop a game that it is often overlooked. This is because it is highly unlikely that you would even consider writing a football game, for instance, if you weren't already a football fan. Nonetheless, it is probably worth stating the obvious at this point. "Observation" must precede data collection. Reading about your field of interest, watching it being performed, or even participating in it are all forms of observation. Also, don't neglect to study all previous games of the type in which you are interested. Your intent is not to "steal ideas" from other games, but to understand how other authors have handled the subject—what things they thought were important. (Writers spend a good deal of time reading just as game developers must spend time playing.)

Let's assume you're reasonably familiar with your game's "system" and you are now ready to begin data collection in earnest. The objective of data collection is to quantify the relationships that you listed in the System Definition Phase. Thus, what things you collect are determined by what you are simulating. For instance, in a wargame the central issue is the resolution of combat. Who wins and who loses in a particular encounter will be determined by the relationships and elements you have classed as important to the outcome. In a "tactical" battle game you might decide that terrain at the defender's location is an important factor. Now you have to decide how important it is. To do that, you need information about the performance of defending troops in various types of terrain. The problem then becomes — where do you find that type of data? In a historical wargame there are numerous sources of battle narratives but little "hard data". So very often you will end up looking at what other wargames have done, particularly board-games. Two notes of caution are appropriate here. First, the numbers used in a particular game are a result of the author's decision as to what was important in the system being simulated. If you copy his numbers, then you must also copy his system definition and finally you have nothing but a computer version of his board-game (plagiarism?). Secondly, and perhaps more importantly, board-games were developed to use six-outcome random number generators known as dice. This required hopelessly arbitrary *discrete* probability outcomes. Discrete in a statistical sense requires that outcomes take specific *known* values. In flipping a coin, two discrete outcomes are possible, a head or a tail. In rolling a single die, six-outcomes are possible. Thus, board-game developers were forced to reduce all outcomes to one of six possibilities.

However, the computer makes this unnecessary. It can deal with probabilities in almost any fashion. But, the state of the art in even computer games is still oriented to discrete probabilities. An example from the field of football simulations will demonstrate the limitation of "discrete" outcomes. Many board-game football simulations and some computer games have used discrete probabilities to determine the number of yards gained for a particular offense against a given defense. For instance, they might have a 40% chance of gaining three yards, a 25% chance of gaining five yards, a 20% chance of no gain, a 10% chance of a seven yard loss and a 5% chance of a twenty-three yard gain if the offensive is running a sweep and the defense is blitzing. You can readily see the limitation of this type of design. In the real world, yards gained on football plays just don't fall into one of five categories based on percentages. The number of yards gained (or lost) can take any value over a continuous range with some outcomes more likely. As opposed to the "discrete" probabilities mentioned above, the real world usually has "continuous" probabilities. While in board-games it was almost impossible to generate continuous outcomes, the computer is perfectly suited to the job.

Continued on pg. 45

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japanese strategy in guadalcanal campaign

stephen van osdell

BASIC INFORMATION

NAME:	Guadalcanal Campaign
TYPE:	Wargame
SYSTEM:	Apple II 48K Applesoft
FORMAT:	Disk
# PLAYERS	1 or 2
AUTHOR:	Gary Grigsby
PRICE:	$59.95
PUBLISHER:	Strategic Simulations 465 Fairchild Dr., Suite 108 Mountainview, CA 94043

It is August of 1942 and the first American offensive of the war is under way. The recent footholds gained in the Solomons has marked Japan's farthest advance to date in the eastern half of the Pacific. Since Pearl Harbor, the Japanese have appeared unstoppable. The Japanese army has pushed the Americans off the Philippines and the British out of all areas of China and Southwest Asia. Their next obvious objective is the mainland of Australia. Earlier in the year, the Japanese seized the port of Rabaul in New Britain and now are using it, and the more northern port of Truk, as a base of operations for further southern penetrations leading to the invasion of the Australian mainland. If an operational airfield can be established in the Solomons, then the fate of Australia will be sealed. With such a foothold, the Japanese will quickly be able to threaten and cut off the shipping lanes between the U.S. and Australia, thus cutting Australia's precarious life line.

To date, the Japanese have almost completed the construction of an airfield on the island of Guadalcanal in the Solomons and have captured the British port of Tulagi. The Americans, in an effort to thwart this Japanese threat, have hastily assembled men and material at the port of Wellington in New Zealand. Because of the priority of the war in Europe and the Middle East, the American planners have had to plan their offensive on a 'shoestring'. Approximately 19,000 Marines of the 1st Marine Div., under the command of Maj. Gen. Alexander Vandergrift, have been assigned the task of seizing, and holding Guadalcanal and Tulagi. The transports carrying their supplies have been loaded hastily, and in such a way that will later severely hinder their orderly unloading.

It is now August 7th, 1942, and you, as the Japanese commander in charge of the Imperial Japanese Forces, have just received an urgent radio message from your forces on Guadalcanal that a large number of American ships have been sighted off the coast and invasion is imminent. Your job, as you begin to play SSI's new game, GUADALCANAL CAMPAIGN, is to throw the Americans off the island and thereby maintain Japan's foothold in the Solomons. . . .

GUADALCANAL — A JAPANESE STRATEGY

Before getting into the Japanese strategy, I feel that it is important to comment on the four levels of difficulty that are offered in the game. I believe that they were derived primarily by solitaire playtesting. This is based on the fact that the Japanese are much easier to defeat in the solitaire game; you will find them to be a reasonably competent player in the two-player version. I have been able to consistently defeat the Japanese in solitaire play at levels 2 & 3. In solitaire, level 4 (the easiest) is not much of a challenge. Level 3 gets pretty interesting, with level 2 forcing the American to be *very* careful. I have not tried solitaire level 1 yet, but suspect that it may put victory almost out of reach for the U.S. All of this changes, however, in the 2-player version. Except for those cases in which there is a great degree of disparity between the two players, the 2-player version should usually be played at level 4 and never above level 3. Even though level 3 is supposed to simulate historical accuracy, level 4 comes closer to achieving a more balanced game.

The Japanese player has several factors strongly in his favor. First, his surface gunfire and torpedo accuracy is at least two to three times better than that of the Americans. This is probably the greatest advantage the Japanese have; but by no means the only one. The Japanese Bettys (twin engine medium bombers that were very vulnerable) from Rabaul decrease the endurance of TF [Task Force] to 10. This is in contrast to the American B17s which do not affect endurance of a TF unless the attack range is 7 or less. Third, the Japanese subs are twice as likely to hit with torpedoes as the American subs. And, finally, the Japanese carrier-based planes are half again as accurate as their American counterparts. How well the Japanese player puts these advantages to use is the key to his winning the game.

The objective for the Japanese is to retake Henderson Field (he can't hope to keep the Marines from initially taking it, and really shouldn't try). To retake Henderson he must negate the American supply there. There are two ways that this can be accomplished. He can knock it out with bombardment missions after the supply has been deposited, or he can prevent it from getting there at all by sinking or badly damaging the American ships that are capable of carrying it. Which of these tactics he selects will depend somewhat on the way the American player handles himself during the first few weeks of the game. Basically, if the American carriers are successful in damaging several of the Japanese battleships early in the game, then the Japanese player should shift his emphasis to sinking the American cargo ships and let bombardment play a secondary role.

This brings us to discussing the type of missions that the Japanese player should assign to his TFs. This is the most critical factor in the game. If he really wants to plaster the American ships, then he should assign a large percentage of his TFs to a combat (C) or fast combat (FC) mission. This type of TF should minimally consist of two CA's (heavy cruisers) and about eight DD's (destroyers). These should always be loaded with the desired amount of troops and supplies, of course. The TF should usually be started out so that they will arrive at Guadalcanal on a night turn. This is so it will not be subject to air attack if it is an FC mission, and also because the American player will

usually prefer to be at Guadalcanal during the night so as not to be subjected to attack by Bettys. It would, of course, be wise to mix in a few combat missions that arrive on a day turn, so that the American won't start relying on your always being there during night turns only. A TF of at least the minimum make-up mentioned above will be able to handle just about any American TF that it encounters. The Japanese player should be looking to catch those American TFs that contain APD'S, DMSs, and TRs, (i.e. cargo carrying destroyers and transports) especially the TRs. With most of his TRs damaged or sunk, the Americans will not be able to win!

I should mention, that if the American ships are on any kind of combat mission, then they will always fire first. Fire is not simultaneous. Ships which are damaged in the first round of fire will have reduced capabilities when they fire back. However, with the deadliness of the Japanese torpedoes, the American ships can get their first shot and still be seriously damaged or sunk by the Japanese return fire. You should note, however, that ships do not sink until the combat round is over. If a ship has sustained enough damage to be sunk, it will continue to fire with what guns it has left and then sink when combat is over. Also, if you send in a bombardment (B) mission, the Americans can slip in with a transport (T) mission at the same time and unload their supply *after* you have carried out your bombardment thus avoiding a surface action. It is therefore a good policy to leave any fast bombardment (FB) mission TF at Guadalcanal for one turn after it has bombarded. These TFs automatically convert to fast combat (FC) missions after the bombardment and can hang around the extra turn to engage in a surface action and still have the endurance to make it back to Rabaul. The key thing to remember is not to do the same thing with such consistency as to allow the American player to be able to predict your actions! Also, remember that a TF with an endurance of 7 or less will not initiate combat, so don't hang around with it past that point.

There will usually be two or three squares where the American will stop his ships at the end of the move just before they make it into Guadalcanal. Look for these patterns during your searches, and when you feel the time is right, slip into one of these with a good combat mission and surprise him. He will usually do this with his TRs so that he can move them in and out of Guadalcanal when he needs supply. These squares will often be the ones north and east of San Christobal. These are also excellent locations for your subs.

In the area of land combat, good advice is not to start attacking the Marines until you have at least 12-15,000 troops. This will usually take you until mid-October to build up. Past this point, be sure to attack the Marines if you are fairly certain (due to the empty craters on a recent bombardment mission) that they are out of supply. In this case their losses will be doubled. Your early attacks should be made at levels 1, 2 and maybe 3. Do not start attacking at levels 4 or 5 until late in the game (middle to late November) when you are sure that you outnumber the Marines by odds of at least 2 to 1.

As for the effective use of your battleships, it is strongly recommended that you not get trigger happy and send them in on combat missions. You will be disappointed with the long range results. These should be reserved exclusively for bombardment missions or possibly as escorts for your carriers. The Japanese CAs, Cls (light cruisers) and DDs are entirely capable of severely damaging any American TF, even if it has one or two battleships in it.

Concerning the Japanese carriers, you should never send them out separately, unless it is to perhaps finish off a crippled American carrier. One possible tactic is to send out the two large carriers along with one of the CVLs. Use all the fighters from the CVL as CAP (combat air patrol) and send the fighters as escorts. The American carriers can put up a very powerful CAP, and you will be hard pressed to get through with enough bombers to count. The best advice I can give is to avoid prolonged engagements with two or more American carriers. Hit them once, hope for a little damage, and get the heck away. This will lower their endurance and put them back in the repair and refit pipeline for awhile. Since the biggest drawback of your carriers is their shortage of planes, you might consider keeping the Ryujo dedicated to continuously training carrier pilots.

Following are some short suggestions and points that should lead to better Japanese play and should be obvious enough so as not to need further explanation. Only attack Henderson field with Bettys When there are no American TFs within range. Don't be too afraig of getting attacked by aircraft from Henderson field. Do try to be careful with your slow BBs when they are going in to bombard. Since they can't avoid getting in and out without being within air range, try to plan these missions when you feel there are few planes and little supply at Henderson. If your BBs get any kind of damage, take the little extra time to get them back to Truk. The time saved in repair will be worth it. If they are undamaged, always get them back to Rabaul before they reach 50 endurance. You might transfer some of your Bettys to Truk occasionally. This will give you the chance of getting more Bettys at Rabaul as reinforcements. After you are reinforced, transfer the ones at Truk back to Rabaul. You can build up some pretty powerful Betty forces this way. Never worry about B17s attacking your TFs. I've yet to see one score a hit, and they don't decrease your endurance unless you're within seven squares of Espiritu Santo. Make it a habit to send some Bettys out on sub search about every other day turn. You will usually spot an American sub just southeast of the Shortlands.

Guadalcanal is a great game, however I must offer a few minor criticisms. The American player should have been allowed to transfer planes from Brisbane to Espiritu Santo. This was done historically via Noumea in New Caledonia. I feel the accuracy of B17 bombing was historically more accurate than portrayed in the game. This is based on first hand accounts from several former B17 pilots I know. I also feel that air attacks from Bettys and B17s alike should have reduced endurance by some percentage rather than knocking it all the way down to 10 in one swoop as the Bettys do. As to whether American torpedoes were really as bad as they are in the game, I don't know. But it is hard to see how they could have been that bad. There should have been some provision for distinguishing carrier qualified planes from ground planes. If you transfer carrier planes off to the land, then they are mixed with the others and have to be retrained. I would like to have seen the ability to carry over odd movement points to the next turn. It would also have been nice if the player had to specify which direction his search planes were being sent out in so you could concentrate search out in the direction where you figured the enemy was. Searching, as it is, seems to be a little too accurate. Except for when the weather is bad, it is very hard to surprise anyone, especially it seems, for the American.

In closing, if you're any kind of wargamer or armchair strategist then by all means, this game is a must for you. It is the game that I, for one, have waited long to see. I hope that it will receive the support it deserves so that more programmers and software companies will be motivated to produce games of a similar nature and level of complexity. To an avid boardgamer, this game alone can justify the purchase of a computer system. ■

four for the atari

allen doum

BASIC INFORMATION		BASIC INFORMATION		BASIC INFORMATION	
NAME:	Attack at EP-CYG-4	NAME:	Hockey and Soccer	NAME:	Shamus
TYPE:	Space Arcade	TYPE:	Sports Games	TYPE:	Arcade
SYSTEM:	Atari 400/800 24K	SYSTEM:	Atari 400/800 16K	SYSTEM:	Atari 400/800 16K
FORMAT:	Diskette	FORMAT:	Diskette	FORMAT:	Disk or Tape
# PLAYERS:	1 or 2	# PLAYERS:	2 or 4	# PLAYERS:	1
PRICE:	$32.95	PRICE:	$29.95	AUTHOR:	William Mataga
PUBLISHER:	Bram Inc. 18779 Kenlake Place NE Seattle, WA 98155 (206) 644-3425	PUBLISHER:	Gamma Software P.O. Box 25625 Los Angeles, CA 90025	PRICE:	$34.95
				PUBLISHER:	Synapse Software 5327 Jauzz St. Suite I Richmond, CA 94804

ATTACK AT EP-CYG-4 is a two-player arcade game where the two players act as a team. One player is the pilot and the other the gunner of a flying saucer trying to destroy the cities of an alien world. The pilot uses his joystick to control flight. The ship moves up and down in direct response, but horizontal movement is based on momentum. The pilot's action button activates the defensive shields. The gunner's joystick moves an aiming cursor relative to the ship's position, and his action button fires the weapon. The weapon will not fire when the shields are up, however. There is a one player mode that combines all functions on one joystick, but that doesn't work as well as the two-player mode. This pilot/gunner concept seems perfect for a parent/child team, with the adult as pilot responsible for the ship's safety, while the child earns the points by destroying the cities. The play of the game has two small problems. Enemy interceptors appear at the edge of the screen with no warning, the same edge the player's ship must exit to get to the next screen. This leads to some occasional 'surprise' collisions that steal a life. The other problem is that both friendly and enemy weapons ignore and may fire through terrain. Some screens portray mountainous areas, and it is disappointing that mountains do not block shots.

The graphics of the ship and enemy interceptors are unexceptional. The target cities are nicely detailed, although the smallest buidings are too small and players might miss seeing them. The 'sweep' effect when the ship goes to the next screen is nice, but a scrolling screen would have solved the problem of edge collisions.

EP-CYG-4 is a good game overall, and I have a feeling that the pilot/gunner concept will be around for a while. The game also comes with a four-color poster.

HOCKEY and **SOCCER** are similar to the Atari VCS games on the same subject. The two games by Gamma Software are so similar that we will consider them together. **HOCKEY/SOCCER** are arcade style sports games for 2 to 4 persons. Each team has three players on the (rink/field) and a (goalie/goalkeeper). The entire (rink/field) is displayed, without perspective, on the screen along with the score and the time remaining. The games may last 3, 5, or 8 minutes.

While the (puck/ball) is in possession of one of the players, the joysticks control only that player or one defender; the other players are moved by the program and will (skate/run) to either block or receive a pass. While the (puck/ball) is free, the joysticks control all three players. The (goalie/goalkeeper) must stay in the (nets/goal area), moving up or down under control of the same joystick when one person controls a team. When two people are in control, the second player controls only the (goalie/goalkeper). There are additional routines for (face-offs/kickoffs) and kickins (in the Soccer game). The graphics are of the kind that leave George Plimpton flat. For those who like the arcade style sports games, these games fall short of what the computer is capable of. However, as two-player sports games, they can be exciting.

SHAMUS is an arcade game reminiscent of BERZERK, with some interesting twists and vastly superior graphics.

The on-screen player, the Shamus himself, wanders through a maze of rooms and corridors throwing knives (called ION-SHIVS) at enemy guards. There are four types of guards, and each behaves differently. Killing guards is not the object of the game, however. This game's version of "evil Otto" is the Shadow, who can be stunned but not killed when he appears to chase the Shamus out of a room. The object of the game is to kill the Shadow, and that can only be done in one place at the end of the maze.

Complicating the maze are several dead-end rooms that the Shamus may only get through after first finding a *Key* that matches the keyhole in the room. Other objects that may be found are vials that are good for extra lives, and Question marks which may also be good for extra lives, but may summon the Shadow to the room more quickly.

As the Shamus goes further into the maze the guards become more numerous, well over 20 in some rooms. (I've never had the time to count them. There might be as high as 40.) The maze has four levels, the action speeding up when the level changes. You can also increase the speed of the game before you begin for a greater challenge.

What sets **SHAMUS** apart from other games on this theme is the animation. The guards are all moving smoothly around the screen, and most of them have internal animation as well.

While the action is fast, it still takes over half an hour to get through the over 100 rooms. The game's largest flaw is that there is not pause control and no place to rest for more than a few seconds. A second flaw is that the routine that controls the game's speed has a bug that can set the game speed incorrectly if you change the speed after having played a game.

Despite these flaws, SHAMUS is easily the most addictive of the games reviewed here, ranking among the best arcade games for the ATARI.

■



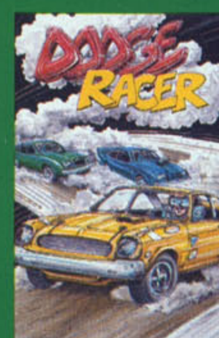








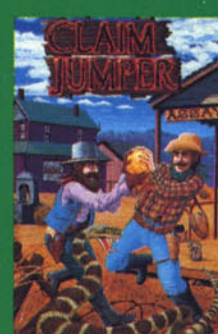












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Eastern Front: Scenario Options

Ian Chadwick

Those of you fortunate enough to have an Atari have more than likely played Chris Crawford's deservedly famous wargame — EASTERN FRONT. If you are at all like myself, or any of the many novices to the game I've spoken to, you probably found it equally frustrating. It's a devil of a game to win, even at the best of times.

Chris Crawford was kind enough to provide me with a copy of the source code to EASTERN FRONT for review in another magazine. Armed with his copious and excellent documentation, the game and the source code (plus a special disk utility program), I set to work to create another scenario for EASTERN FRONT. One I could perhaps stand a better chance at winning.

I was, at the time, more of a machine-language novice than I am now, so this looked like a formidable task. However, Crawford himself made the job considerably easier by including many of the elements which I wished to alter in the actual code itself, modified so that they'd have no effect in play.

One of my problems was that I felt under-gunned against the Russians and wanted to add additional units. Well, it happens that there are eleven German and two Axis units written into the code that do not come into the game. This allowed for a fairly straightforward modification then: I had merely to change their turn of arrival from 255 (a non-existent turn, since the game lasts a mere 40 turns!) to the appropriate turn. I checked an order of battle and found that all units but one were to be found in the front lines, June 1941.

Another problem was the Russian replacement rate. Each turn the Russian units added two points to their combat strength; this includes militia units. Historically, nations tend to create new operational units rather than merely reinforce existing ones. Also, units have operational maximums and I discovered many units exceeding even wishful thinking in their growth! One case is the 8th Militia Army sitting on Moscow. It starts off with a reasonable (? well. . .) 185 combat strength, but left unmolested, quickly grows to 250 or more, making a militia army one of the most powerful units on the board! I doubt that Yeremenko or any other Russian general would have traded even one weak army corps for ANY militia unit! So in order to reduce the Russian replacement rate, I changed the increment from two to one.

The Finns seemed a trifle useless in the game as they are not allowed to attack, even in conjunction with a German attack on the same unit. Russian units never bother attacking them otherwise, so I wanted to give them a role to play. While historically the Finns were rather less than active offensively compared to the Germans, this isn't strictly true of their role in the war. I preferred to allow the Finns the capability to launch attacks but restrict myself to allowing attacks only in conjunction with German units. Also, for historical purposes, you should restrict their movement to within two or three squares of their own border.

A further point I questioned was the terrain effects chart built into the code. Crawford attributes a movement value of 18 to infantry moving through cities in dry weather, 24 in mud and 10 in snow. The movement costs for armor are 6, 30 and 8 respectively. This seems rather steep for the most part, so I changed these figures to values more in keeping with my own reading and wargaming: infantry at 8, 12 and 10, armor at 6, 16 and 8. You can see that I didn't have any quarrel with the snow values. I also changed the mud values for mountain/forest squares from 30 for both infantry and armor, to 20 and 25 respectively.

I wasn't entirely pleased with the defense values for the terrain types either, so I reduced the values of clear terrain by one and incremented the value of the swamp by one.

My final change is to the number of game turns; from 40 to any number up to 255. Crawford built in the codes for the entire year as he had originally designed the game for the entire Russian Front campaign, but reduced it due to size and length of game. One day, maybe, we'll see an unofficial version he will release with all of the units and years included.

You must realize that many of my decisions are based on my own interpretation of history and my own experience during a decade of wargaming, just as were Crawford's decisions. I acknowledge his mastery of programming, but I feel fully justified in arguing points of terrain, strengths, unit sizes and other factors. These changes together produce a strong affect on the play of the game, but not quite so radical as they may appear at first. It's still a rough go for the beginner.

There are other changes I didn't dare undertake. One is to prevent Russian units from retreating west across the border in the first months of the war. Annoyingly enough, they do this; even into Hungary which was neutral at that time and didn't enter combat for another month or so. This little oversight in Crawford's game is an irritation to many people who play his game. I also didn't bother to change the length of the error buzzer time loop, although I would have dearly loved to have done so!

I've listed these changes below; you can make these changes individually or as a whole depending on what you want out of the game. You will need an original copy of EASTERN FRONT and you will have to back up the entire disk onto a clean, formatted disk. Using any of the popular utilities to read and edit disk sectors (such as DISKSCAN from Micromedia or DISK DETECTIVE from Datasoft), you will be able to easily alter EASTERN FRONT as I've described above. You should find the game is 109 sectors long and begins at sector 85 ($55). For ease of alteration, I have included both the decimal and the hexadecimal numbers of the sectors and bytes to be changed. If you are at all interested in the rationale behind the game, its mechanics or in just seeing a good example of a well-designed program, I recommend strongly that you get a copy of the source code from the Atari Program Exchange (APEX).

ADDITIONAL GERMAN UNITS

There are thirteen units available to the German player, twelve of which appear in the opening set up as listed below. For the novice, I recommend the addition of all of them. Stronger players may want to add only a few. To add a unit, change the following bytes in sector 118 ($76) from 255 ($FF) to 0:

UNIT:	STRENGTH:	BYTE:
39 Panzer Corps	205	6 ($6)
12 Infantry Corps	109	15 ($0F)
13 Infantry Corps	72	16 ($10)
20 Infantry Corps	70	17 ($11)
42 Infantry Corps	81	18 ($12)
43 Infantry Corps	131	19 ($13)
53 Infantry Corps	102	20 ($14)
3 Ital Inf Corps	53	21 ($15)

Continued on pg. 44

MICROCOMPUTER MATHEMAGIC

WELCOME to Micro-Magic! In this column, during the forthcoming months, I would like to share with you some interesting recreational mathematics and computer applications which have been sadly neglected in our schools. I hope that this column will not only amuse and entertain you, but also stimulate you to think about the whys, hows and even the what-ifs. It is also almost certain to have the bonus effect of improving programming know-how — at least it has for me. I hope to hear directly from readers who have some of their own micro-magic which they might allow me to share, as well as superior programs or any other feedback you wish.

DIGIT PREDICTION:

One of the most popular types of parlor tricks is the "prediction" type. In this amusement, the computer asks you to pick any whole number, which is not revealed or INPUTted. Let's say you pick 1234. You are next asked to add up the digits to your number. In this case, 1+2+3+4=10. Now subtract this last result from your original number (either mentally, or if you must, on a hand calculator). We now have 1234-10=1224.

This is where the computer "does its stuff". It now asks you to think of any digit (other than 0) in the last answer (1224 in the above). You then enter the number that is left over after you remove the digit that you've picked. If you picked "4", enter 122 when requested. The computer will tell you the digit you picked (in this case, 4)!

Though the digit prediction program (program number one) was produced on a TRS-80 model 3, it is easily modifiable. Make appropriate modifications for your computer such as the 'clear screen' command (CLS for TRS-80, HOME for Apple, etc.). CHR $ (23) produces double width letters for the TRS-80.

```
1 CLS
5 PRINT @323, CHR$(23)"MICRO-MAGIC DIGIT PREDICTION"
8 FOR Z=1 TO 1200:NEXT: REM TIME STALLER TO ALLOW READING
9 CLS
10 PRINT:PRINT "THINK OF ANY WHOLE NUMBER":PRINT
15 FOR Z=1 TO 1500:NEXT Z
20 PRINT "ADD UP THE DIGITS OF YOUR NUMBER"
30 PRINT:FOR Z=1 TO 3000:NEXT
35 PRINT "NOW SUBTRACT RESULT FROM ORIGINAL NUMBER":PRINT
40 PRINT "PRESS ANY KEY WHEN YOU ARE READY TO CONTINUE":INPUT X$
45 CLS
50 PRINT "THINK OF ANY DIGIT IN THE LAST ANSWER (but not 0)"
60 FOR Z=1 TO 500:NEXT
65 PRINT
70 INPUT "WHAT IS THE NUMBER LEFT IF YOU DELETE THAT DIGIT";N$
75 S=0
80 FOR I=1 TO LEN(N$)
85 S=S+VAL(MID$(N$,I,1))
90 NEXT I
100 IF S>=9 THEN S=S-9:GOTO 100
110 A=9-S
120 FOR Z=1 TO 700:NEXT
125 CLS
130 PRINT "CONCENTRATE NOW ON THE MISSING DIGIT..."
135 FOR Z=1 TO 1000:NEXT
140 PRINT:PRINT "AHA!  THE MISSING DIGIT IS";A
145 PRINT:PRINT:PRINT:PRINT:FOR Z=1 TO 1000:NEXT
150 END
```

```
10 CLS
20 PRINT CHR$(23)"THE REMARKABLE NUMBER 153"
30 PRINT:PRINT "by Dr. Michael Ecker"
40 FOR Z=1 TO 1200:NEXT
50 CLS
60 INPUT "GIVE ME A WHOLE NUMBER WHICH IS A MULTIPLE OF 3";N
75 N$=STR$(N)
77 L=LEN(N$)
80 IF ABS(N-INT(N))>.01 THEN PRINT "A WHOLE NUMBER PLEASE!":GOTO 60
90 IF ABS(N/3-INT(N/3))>.01 THEN PRINT "A MULTIPLE OF 3 PLEASE!":GOTO 60
95 S=0
100 FOR I=1 TO L
109 REM LEFT BRACKET OR UP ARROW INDICATES EXPONENTIATION
110 A(I)=(VAL(MID$(N$,I,1)))[3
120 S=S+A(I)
130 NEXT I
140 PRINT "THE NEXT NUMBER IS";S
150 IF S=N THEN PRINT:PRINT "PROCESS IS COMPLETE"
155 IF S=N THEN PRINT "TO START AGAIN, TYPE ANY KEY":INPUT X$:GOTO 50
160 IF S<>N THEN N=S:S=0:GOTO 75
200 END
```

THE REMARKABLE NUMBER 153

Take any whole number which is a multiple of 3 (3, 6, 9, 12, 15, 18, etc.). Suppose you picked 345. Take the cube of each digit and add the cubes: 3*3*3=27. 4*4*4=64. 5*5*5=125. 27+64+125=216.

Now repeat this with the number 216. You should get 225. Repeating gives 141, then 66; then 432; 99; 1458; 702; then 351 and next 153. Once it hits 153 you will find that you keep getting 153 because 1*1*1 + 5*5*5 + 3*3*3 = 1 + 125 + 27 =153 again!

The remarkable fact is that no matter what multiple of 3 with which you begin, you must eventually hit the number 153. Program two will take any input and test to verify that you have used a multiple of 3. If so, it will then calculate and display the numbers obtained in this process. Readers who are curious as to what happens if the original whole number is not a multiple of 3 are encouraged to modify the program to skip the initial test. In any case, the program terminates when the next number obtained is the same as the previous one. In the case of starting with a multiple of 3, it turns out that 153 is the only multiple of 3 which is the sum of the cubes of its digits, and so the unmodified program should always terminate with 153.

Readers who wish to correspond are encouraged to write me directly. Useful suggestions will be acknowledged, and very original and especially useful ideas may sometimes result in several months subscripton extensions courtesy of our generous editor. My address is:

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Dr. Michael W. Ecker is Assistant Professor of Mathematics at the Pennsylvania State University's Worthington Scranton Campus in the Scranton, PA area. He is known for his interest in problem solving and recreational math, as well as his new-found addiction for home computing — especially computer gaming.

THE ULTIMATE

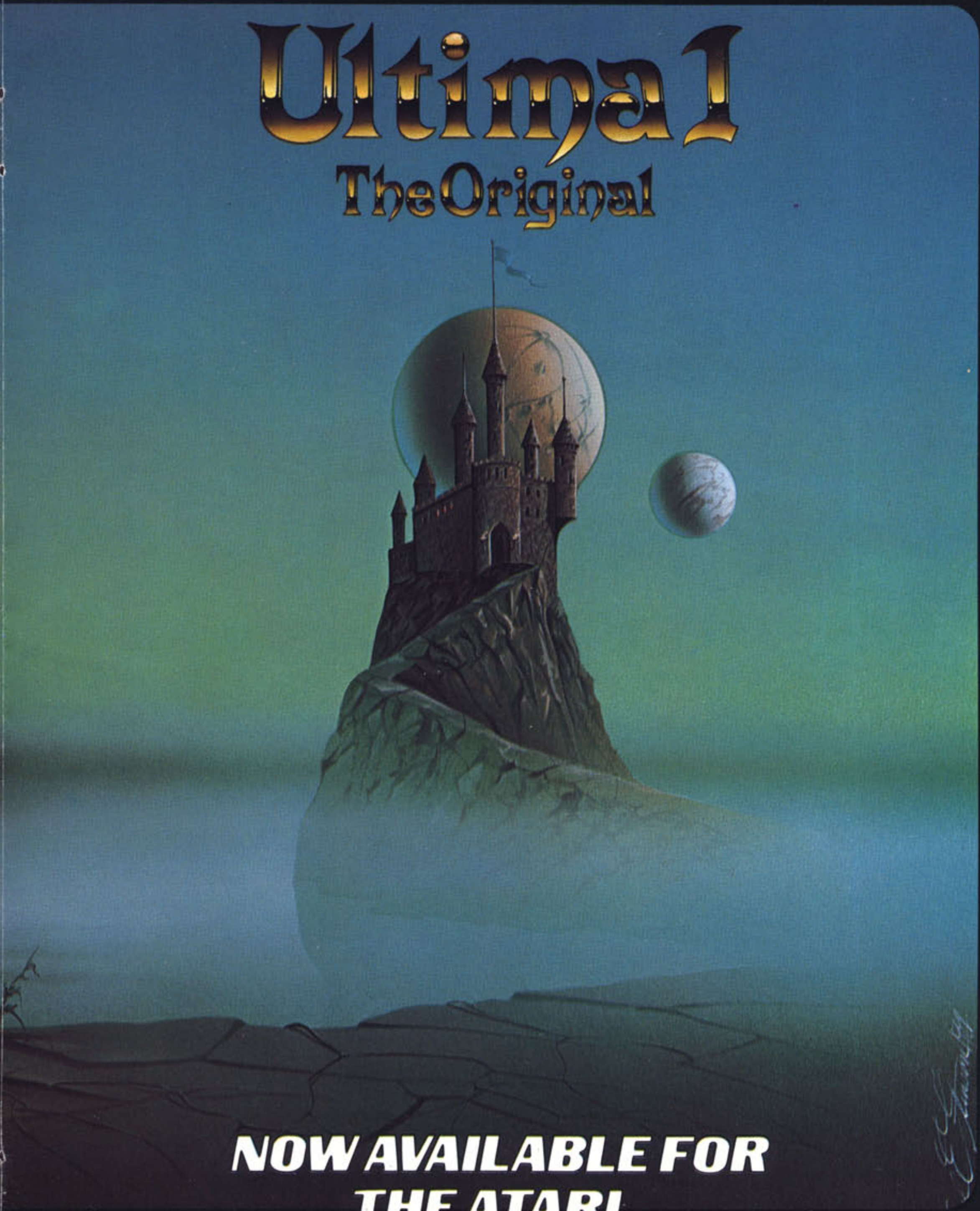


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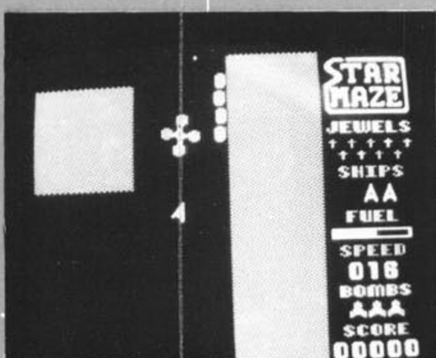
STAR MAZE

Sir-tech's New Hi-Res Space Arcade Game

Russell Sipe

BASIC INFORMATION

NAME: STAR MAZE
TYPE: SPACE ARCADE GAME
SYSTEM: Apple II 48K
FORMAT: DISKETTE
PLAYERS: 1
AUTHOR: Gordon Eastman and Robert Woodhead
PRICE: $34.95
PUBLISHER: Sir-tech Software
6 Main Street
Ogdensburg, NY 13669
(315) 393-6633



Sir-tech's WIZARDRY fantasy gaming system is so well designed and has been so popular that it has been with anticipation that many gamers have awaited the release of Sir-tech's first hi-res arcade game, STAR MAZE (SM). Programmed by Gordon Eastman from an original game design by Robert Woodhead, SM takes elements and images from time-honored computer games and puts them together in a well-designed and challenging package. Basically, SM is an *Asteroids* type game. The player pilots his "A" shaped ship around, firing at enemy units and recovering the "jewels" which inhabit the maze. The game also has elements of the old *Pong* game in that the ship can bounce off the walls of the maze (complete with the familiar "pong" sound). Friendly and enemy fire also bounce off walls thus allowing "bank shots".

SM, as the name suggests, is played in a maze. While this is a common playing ground for many games, the SM maze more resembles an open field of blocks than a tight sequence of narrow corridors. The effect of this is that the concept of a maze exists alongside the elements of open space warfare. Each level has a different maze and the smart player will take the necessary time to map the various levels. Mapping in SM will not be like that done for an adventure type game. The maze is small enough and action is quick enough that much of the mapping can be done mentally. The player should start with the block nearest his home base and fly around it noting its shape. Then, branch out noting the shapes of other blocks and their relationships to one another. As the mazes are fairly small, and wrap around in both the horizontal and vertical directions, it should not take long to "map" a level. The colors of the blocks are an aid in identification of the block only during that particular playing of the game on that level. The colors will be different with each playing of the game, although the shapes remain the same for each particular level.

The enemy units are, for the most part, drawn from well-known computer game images and foes. Asteroids and flying saucers similar to those in *Asteroids* are present, as well as a *Centipede*-like bug train. When elements of the bug train are hit, they transform into *Phoenix*-like "birds" which can be deadly if not dispatched with haste. The space station is interesting. Four pods are joined by a cross. The various actions of the parts of the station when hit make the space station one of my favorite targets in SM.

There are 16 levels in the game. Each level contains nine "jewels" which must be picked up by your space ship and returned to your home base. Upon delivering the last of the jewels, a bonus of 500-2500 points is awarded for completing the level. The amount of bonus is based on the amount of time you take getting the "jewels". After the bonus is added to your score, you are transferred to the next level to begin the search for jewels all over again. One unfortunate oversight in the game is the lack of a level indicator. You will have to keep mental or handwritten notes as to which level you are on. This oversight is regrettable since the addition of a level indicator would have been a minor programming task. One wonders if outside playtesters were used to test pre-production copies and, if so, why this obvious oversight was not caught.

There are a number of techniques for making your way around the maze in

Continued on pg. 44



STAR MAZE CONTEST

Get to the 16th level of STAR MAZE and you can win big! *Sir-tech Software*, in conjunction with Computer Gaming World, is offering prizes to three lucky people who can reach the 16th level of their new space arcade game, STAR MAZE. The first place prize is $100.00 worth of Sir-tech products. Second prize and third prize are $75.00 and $50.00 respectively in Sir-tech products.

CONTEST RULES

1. Each contestant will submit a map of the 16th level of Sir-tech's STAR MAZE game. The map should be of sufficient detail so it is clear to the judges that the contestant has indeed gotten to and mapped the 16th level.
2. Tie-breaker: Some shapes closely associated with the two authors appear on a certain level or levels. What are the shapes and on what level(s) do they appear?
3. Each entry should include your name, address, and phone number.
4. Entries must be postmarked no later than **December 31, 1982**.
5. First, second and third prizes will be determined by random selection from among the correct entries (i.e., correct map and correct answers to tie-breaker). If less than three correct entries are received, places will be determined on the basis of closeness to fulfillment of the contest's requirements.
6. All correct entries will receive a one year subscription to Computer Gaming World. To this end, please indicate if you are a current subscriber or not.
7. Winners will be announced in the January-February 1983 issue of CGW.

— FINKAS —

LEGIONNAIRE: Review and Analysis

Bill Willett

BASIC INFORMATION

NAME:	**LEGIONNAIRE**
TYPE:	**Real Time Wargame**
SYSTEM:	**Atari with 16K**
FORMAT:	**Tape or Disk (32K)**
# PLAYERS:	**One**
AUTHOR:	**Chris Crawford**
PRICE:	**$35.00**
PUBLISHER:	**Avalon Hill Game Co. 4517 Harford Road Baltimore, MD 21214 (301) 254-5300**

Sabinus had the high ground, as I remember. He'd had that hill for three glorious days and now rested confident that this battle would bring glory to his scorned group. The Nervii were tough, but the long journey would bring them near exhaustion. Even the newest conscripts had heard the stories of the Nervii chasing his enemy without end, and paying the price at the battle like the hound that collapsed while chasing the fox. Sabinus watched the enemy move into fast march as they came down the last hill before the two would meet.

Sabinus was ready. They had reached that hill tired and in no shape to fight, still stinging from their retreat from the Nervii of the north. But now he was ready, rested, and prepared with a simple but fool-proof plan. When the Nervii trudged to the high ground, Sabinus would rush down the hill, taking full advantage of his greater speed, better view, and superior range. He knew that the enemy would quickly break and run back down the hill. He'd follow and secure the first substantial victory of his career. Oh he was ready, too ready.

The Nervii leader from the north had been through this before. He would almost have the Romans, then they would always slip away. But this last group had acted strangely; first running at the slightest hint of battle, and now sitting for days. The Romans could outrun him, he knew, but only if they got to it quickly. As he crested the last hill before the Romans, he noticed the tired southern Nervii doggedly marching towards the Romans. This explained it. That poor excuse for a Legion thought it had an easy prey. The Nervii leader quickly surveyed the valley before him and read the terrain perfectly, choosing the quickest and most level path. He stationed himself just on the other side of the crest of the Roman's hill, just out of sight.

Sabinus felt his blood surge as he watched the Nervii break and run. He was shouting to his men to enjoy their victory even as it happened. He also felt his stomach knot up as the northern Nervii charged down upon him. The Romans were shattered. The hundreds of new recruits panicked at a rear attack by such a feared enemy. The Nervii were one group to fear when they were rested — and these were rested. Sabinus cried as he bled from his wounds. Not because he cherished his life and wished to live, but because he had come so close to pleasing Caesar this time and would now never have another chance to be the legionnaire he had dreamed of as a young boy.

This whole scenario happened to me while playing LEGIONNAIRE. I'd marched my infantry piece, commanded by Sabinus (described in the owner's manual as being poor in leadership — almost all of the better centurions have inveigled transfers to other units), to the top of a hill and waited for the Nervii. While I was off commanding my other four pieces, a different Nervii piece rode out of nowhere and destroyed the Sabinus piece. Of course, I was only as experienced at Legionnaire as Sabinus was about the Nervii.

LEGIONNAIRE lets you command up to ten legions, all with different characteristics, against the computer-controlled barbarians. You must eliminate all the Barbarian units before they destroy Caesar's legion. You play on a large topographic map with forests and four terrain heights. You enter almost all commands with the joystick during real time. Those of you who have played **EASTERN FRONT** can picture LEGIONNAIRE quickly by imagining EASTERN FRONT with terrain contours instead of streams, hills, and swamps. Also, picture having the Russians moving in real time forcing you to think accurately and quickly. Every second you ponder during Legionnaire is an action taken by your adversary.

The package is the standard Avalon Hill bookshelf size with a rather bloody depiction of Roman battle on the front and a story-like description of one Legionnaire game on the back. Also, this is one of the few games that has graphics good enough to warrant a picture of the TV screen right on the package. I have a cassette version which includes a full color game catalog, a price list, and the instruction manual. The twenty page manual devotes four pages to game operation, seven pages to detailed descriptions of the Romans and the Barbarians, four pages to historical background including a chronological description of the Gallic wars, three pages to tactical hints, and two pages to cassette trouble-shooting. Having played many games of EASTERN FRONT, just a glance at this manual had me eager to get on with my first game of Legionnaire.

The cassette version takes about one minute to load. The program first asks you how many Roman legions you would like to command. You can choose a number between one and ten by movig the joystick forward or backward to increment or decrement a number on the screen. You make your choice by pressing the fire button. If you choose all ten, your army will include *Caesar* (the most powerful legion in the game), *Crassus* and *Labienus* (the only two Roman cavalry legions), beginning with the large and spirited legion of *Galba* and generally decreasing in effectiveness to the hopeless legion of *Sabinus*. When you choose any less than ten, your army is created from the strongest legions. For example, if you choose four legions, your army will include Caesar, the two cavalry, and the strongest infantry, Galba.

The number of legions you choose affects both the difficulty of the game and the playing time of the game. The computer will always give the barbarians twice as many units as you take. So, even though the ratio of barbarians to Romans remains the same (two to one), the effectiveness of the Roman army decreases with size as you add more and more of the weaker armies like Sabinus. This makes a game with one legion (Caesar) quite manageable. But, with ten legions, some of which are nearly useless, keeping track of so many pieces and watching out for the weaker legions is quite difficult. Of course, the more legions involved in the game, the longer it takes to play. A game with Caesar alone may take ten minutes to play whereas commanding all ten legions may result in a forty minute game.

After you have chosen the number of legions with which you wish to play, you choose the barbarian army that will opppose you. The opposing army is half infantry and half cavalry. You choose which type of infantry and which type of cavalry you will oppose by using the joystick as you did while choosing the Roman army. There are sixteen different tribes, eight cavalry and eight infantry.

Once chosen, all the infantry or cavalry within that army will be identical (as contrasted to the Roman army where each legion is different). Your infantry opponents begin with the nearly defenseless *Aedui* to the "most feared infantry in barbarian Europe", the *Helvetii*. Similarly, the cavalry range from the helpless *Auscii* to the *Huns*. The Huns are nearly indestructible and can only be defeated with a liberal application of luck. The Huns were added to the game to give even the heartiest and most skilled game player a monumental challenge. In fact, the Huns did not even exist at the time of Caesar, as the manual explains, and had to be borrowed from Caesar's future in order to get a powerful enough opponent.

Once you have the armies chosen, the computer prompts you to press the start key on the console in order to begin the game. Doing this will start the Barbarian attack and will intensely rivet you to your computer for the next half hour. You can, however, break away from the game, as there is a pause function which is toggled on and off by pressing the select key. But, before beginning the game, you should look over the entire map to locate Caesar and the enemy, and create your battle plan. The map board, which remains the same from game to game, is actually much larger than the screen and can only be seen by scrolling over it. This is done with the joystick. You move the cursor, a rectangle the size of one legion, over the screen in the direction that you push the joystick. When the cursor reaches a side of the screen the entire map scrolls across the screen to reveal other sections of the map.

What you will see is a topographical or contour map with three colors of contours. These are connected lines which define an area and indicate the elevation of the ground contained within it. There are four elevations, ground level and the three heights denoted by the green, blue, and pink contours. You can read or picture the hill structure with these. This is vital in order to take advantage of height-related attack effects and slope-related speed and exertion effects. Moving across a contour line represents either moving uphill or downhill. You will also see groups of trees on the map. These represent dense forests that are impassable to all pieces in the game. The Roman legions, in pink, are represented by an eagle for Caesar, a horse's head for cavalry, and a sword for infantry. All pieces of similar type are represented by the same symbol on the map. The Barbarians, in blue, are also represented by horse heads and swords. The armies are placed on the map randomly different in each game. The Romans form one cluster and the Barbarian infantry and cavalry form two other clusters, not necessarily together. This represents all the information available before the start button is pressed and the game begins. Once the game is under way, the player can inspect each of his units and the enemy units by positioning the cursor over one of them and pressing the fire button. What you will see is;

Caesar Men 4000 Swords 3290

First is the name of the unit, then the actual number of men in the unit. The number of men decreases throughout the game due to battle attrition. The last number, swords, denotes the power of the piece. Swords will equal the number of men when a piece is fully rested, however, it will be reduced if the piece is tired from marching or weary from battle. Swords tells you the actual fighting ability of the piece at any time.

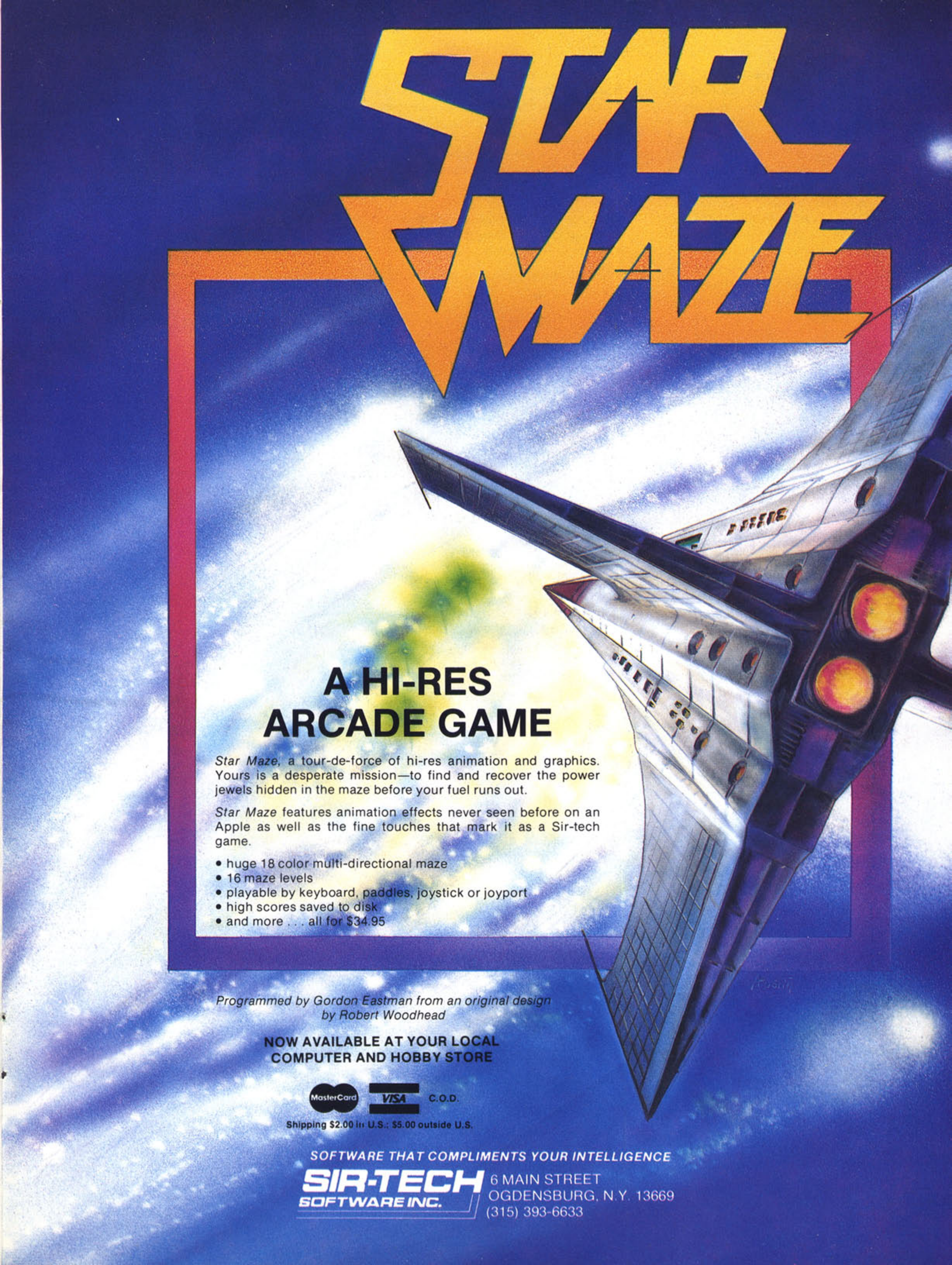
When you press the start button you will immediately hear the sound of marching men. This, and the other three distinct sounds are not only for effect, they also convey vital information. There is a low-pitch beep which signals the start of a time period. In LEGIONNAIRE, all actions take certain amounts of time. These are measured in time periods. For example, a particular cavalry unit may take five time periods to move up a hill, or an infantry might take twentyfive time periods to move across flat land. In this way, all pieces move at different speeds. The marching sound that you hear is actually a sound accompanying each piece's attempt to move. That is, each time period that the infantry tries to move would cause one 'foot stomp' sound. The effect is that ten or twenty pieces all 'foot stomping' between each time period beep sounds like marching armies. With each 'foot stomp' comes what the manual calls 'animating'. Once during each time period, when you hear the stomp, you can see the marching piece be replaced by an arrow pointing in the direction it is trying to move. This arrow is quite important because it can tell you which of two pieces is going to move first. You do this by listening for the time period beep and then looking to see which piece 'animates' first. If a piece should attempt to move into an enemy piece, a battle ensues. The third distinct sound in the game is the sound of battle, simulated by a clashing swords sound. This is a terrible sound to hear when you are busy at one part of the map and the Barbarians have caught up to one of your pieces somewhere else. Of course, the last sound, the squeal of a dying legion, is by far the most heartstopping in the game.

Your first order of business is to give your legions their orders. This is done by positioning the cursor over them and pressing the fire button on the joystick. You can then enter up to eight movement instructions with the joystick. You will see an arrow move along the path that you have directed ending in a ghost of that piece. Releasing the fire button gives that piece those instructions which it will now attempt to follow. You may change the orders of a piece by again holding down the button and then pressing the space bar on the console. This will erase the last movement given. The piece will now make the moves you have directed and, if you inspect it again, it will show, with the arrows, the remaining commands which you can change or add to. In this way you keep all your legions working towards the goals of your battle plan.

The Barbarians are relentless and keep pursuing the nearest group of Romans. Eventually the two armies begin to clash. A battle is indicated by the clashing swords sound and a flashing of the defending piece. Both the attacker and the defender are affected by the attack with a reduction in men due to losses and a reduction in swords due to exertion in battle. The losses are in proportion to the swords of each side. This is affected, however, by a number of things. First, slope effect gives the piece on higher ground the advantage since he has better visibility and range, and can more easily push the defender downhill than the defender can attack uphill. Also, the attacker is given a bonus just for being on the attack. An attacker has a large advantage if the defender is moving. This makes a flank or rear attack devastating. Shock effects can cause a piece to retreat. That is, if a piece is losing badly in a battle or is attacked by an ominously larger enemy, he may break and run from the battle. Once a piece breaks, as Sabinus did in the story at the beginning of this article, he is very vulnerable to the rear attack as he scurries from the attacker.

Usually your first directive to the legions is to take the high ground. Getting your troops there in time can be difficult. The speed that they move is determined by two things. First, the characteristics of the piece. Cavalry pieces and Caesar move at about the same speed, around four time periods per move. The infantry vary but will generally take about twenty time periods to move. The Barbarians vary widely on their speeds, the stronger units tending to be faster. The second affect to movement is the terrain. Moving uphill

Continued on pg. 30


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slows a piece, downhill speeds it up. One obvious effect is that if two identical pieces are given orders to attack each other at the same time, the one moving downhill will attack first. A typical speed change for a move that normally takes four time periods might be, uphill becomes nine time periods and downhill becomes two time periods. Obviously, the skilled player of LEGIONNAIRE must learn to take full advantage of the slopes.

Along with getting your legions to the high ground comes getting them there in enough time to rest up for the battle. Each piece has a different rate of recovery that varies from Caesar's nearly immediate to the slow recuperation of Plancus. At the beginning of a game a typical piece may have men and swords equal to 2600. After a long trek over a hill or two his swords may be down to 1200. The piece must rest for perhaps forty time periods for his swords to gradually come back to full power. You will notice that the Barbarian infantry will travel exhausting distances to reach you but will stop short of actual battle and wait to regain most of their strength. You too must do this unless you are still powerful enough after travel to attack successfully. Movement will never lower a piece's swords to the point of destruction, but it will make it so weak that one attack will destroy it. To destroy a piece you need only bring his swords down to zero, not his number of men. It is assumed that when his effectiveness is zero the remaining demoralized men scatter into the countryside.

Of course, your overall goal is to destroy all the Barbarian pieces before they destroy Caesar. The player can quit anytime by pressing the option key on the console. Accidental quitting is protected against by an inquiry from the computer asking if you would like to continue the game. But winning isn't everything. You receive a score once you have completed the game, whether Caesar died or not. The score is based on the losses each side took. This score can be negative, very bad, to positive, fair or good. The scoring scheme seems to offer scores proportional to the number of men you take and to the power of the Barbarians that you engage. In order to have a quantitative value for any combination of number of Legions and difficulty of Barbarians I did the following. First, I assigned to each Barbarian tribe the number of their location in the list in the manual, one for the weakest up to eight for the toughest. I then always picked the same number for Barbarian infantry and cavalry. Next, I multiplied my score times the Barbarian number times the number of legions I had chosen. For a game in which ten legions fought against the *Eburones* and *Ubi* and the game score was fifty, the quantitative score would be (10 legions) X (2nd set of Barbarians) X (50 score)=1000. In a 44 game stretch where I recorded my scores for each game, my high scores averaged about 400. My best so far is 1050 while commanding ten legions against the third set of Barbarians.

But how do you get high scores? Some of the tactical hints given in the manual are useful. Make the enemy fight from the lower position. Make him tired by marching to reach you. Plan your moves to give your legions maximum rest. Keep your better legions up front and use your weaker ones for clean up. Try to eliminate all of the infantry or cavalry before the other group gets to you. Use the cavalry for chasing down weak retreating units. Use cavalry to counterattack downhill against an enemy who is himself attacking one of your legions downhill. Try to surround an enemy with forest and your pieces. Avoid frontal atacks, concentrate on rear attacks. The manual also suggests two overall strategies. One is to assemble on top of a hill and wait for the enemy to come to you. The disadvantages are that this may give the two Barbarian groups time to join together before they reach you; also, you may not be close enough to a hill to assemble there before they reach you. The other suggestion is to use the forests to funnel the enemy through to you one or two at a time.

When I heard about people using the number of units they had left after annihilating the Germans as criteria for how much better than 255 their score was in **EASTERN FRONT**, I started to doubt my abilities as a wargamer. None the less, I'm going to present the strategy I used to earn my 1050 composite score in Legionnaire. I was playing against the *Suevii* infantry, a large and strong group that fight well but become disorganized easily. This meant that I had to force the attack and stay out of their way when they attacked. My cavalry opponents were the *Menapii*, a large and speedy group. They weren't going to be easy to defeat, but with my strong pieces at the top of a hill I should have little chance of being thrown off. I was fortunate to be very near a large high hill with a group of trees at the base between me and their cavalry. The infantry were far off and would pose no danger for quite some time. I sent my weaker cavalry, *Labienus*, to lure these infantry from my hill when they finally got in range. *Crassus*, my main cavalry, charged straight toward the oncoming enemy cavalry with the hope of breaking this huge mass into something I could handle. I had long ago found that the weaker infantry, *Plancus* and *Sabinus*, were useless in battle so I sent them over my hill well out of danger of attack. I then set up my remaining infantry on the hill with Caesar in the middle of a line along the ridge that was nearest to the forest below. *Cicero* and *Galba*, my next two strongest infantry, flanked *Caesar*. They were themselves flanked by *Fabius* and *Roscius*. My plan was to get the oncoming cavalry to chase *Crassus* around the forest below while I lured one or two of the horde up the hill to their death. Due to the game's tendency to keep all of a Barbarian group together and marching towards the nearest Roman legion, the cavalry dutifully marched after Crassus as he constantly circled the forest. Due to traffic problems, only about one half the enemy group would actually get around the forest. I'd then send *Caesar* temptingly close to one of their cavalry and lure him up the hill where *Caesar* or *Cicero* could make short work of him. I took about nine trips around the forest to finally finish off the cavalry. Because of my high-ground advantage, I'd suffered only minor losses. Meanwhile, *Labienus* had started leading the infantry horde toward my forest trap. These poor soldiers were nearly dead from their constant chase of *Labienus*. With the long rest afforded my troops on the hill as the slow infantry approached, I had good strong troops to attack with. I broke the infantry into two groups using my two cavalry to get one half o f them to go off chasing *Crassus*. I finished up the game by finishing off first one, and then the other, tired infantry group. I didn't lose one legion, although I lost quite a few men while destroying the infantry. My score of only 35 hurt, but I was proud that my plan worked.

One of the more enjoyable battles I had was with only *Caesar* and *Crassus* against the two strongest Barbarians. My average score after six games was minus nine. But out of that there was one score of plus eight. The *Huns* are very, very tough. The only way to beat them was to start *Caesar* attacking down the hill before they even got to him so that I got the first strike in. Even then, I would have to have the height advantage and be clear of the second cavalry piece or risk destruction. I found that five Roman legions provided the most pleasurable game for me. This provides an army of two infantry, two cavalry, and Caesar against the two groups of five Barbarians each. Of course, the Eastern Front aficionados will be bragging about clean sweeps against the *Huns* in a few months, but I'll give a few of my scores for future reference and the amusement of the professional wargamers out there.

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CYTRON MASTERS FOR THE ATARI - CONVERSION versus UPGRADE

Dan Bunten

Cytron Masters is a "half-breed" game. It's either a strategy game with action or an action game with strategic elements. Whichever it is, I (and my compatriots) initially wrote it for the Apple. As the game is entirely in machine language, and I had an Atari 800 collecting dust, I decided to "convert" Cytrons to the Atari. Sounded easy enough to me (and the other lunatics in my company)! After all, both machines have "high resolution color graphics", both can do sound effects, both have standard game input devices (paddles and joysticks), and both use a 6502 processor. But what a difference a "generation" makes!

The Atari is the next generation computer (as compared to Apple) and it has all the features to prove it. I have been writing software for the Apple since 1978 and am just now getting to where I know how to make it sing. However, I found that sophisticated effects that require a lot of work on an Apple can be done with ease on an Atari.

Anyway, back to my story about "converting" Cytron Masters. This game is the result of almost eight months of development on the Apple and is an attempt to bring the "real-time" challenge of arcades to a strategic battle game. In the two-player version (solo is also available), each opponent can constantly create and order armies of up to fifty separate Cytrons (robots) on a battlefield which includes a number of capturable features. In addition there are animated fire-fights, fragment explosions and sound effects. I hope you can imagine the difficulty in writing a computer program that handles a hundred "intelligent" robots while processing "simultaneous" input from two players. As anyone who has attempted even a simple flash explosion with simultaneous sound can tell you, the Apple can't do two things without a lot of effort (you have to time your clicks of the speaker with your graphic draw routine so that they take turns). *It was a tough program to write.*

After spending a great deal of time on the Apple version, I expected to just "duplicate" the same things on the Atari. (This being the tack that many Apple programmers have taken.) The Atari owners I spoke to, however, said, "It's a neat game but where's the color?" (Apparently Atari folks think you have to use five or six colors on a screen to qualify for "color graphics"!) Also, they wanted to know "What are those little noises?" — referring to the difficult to achieve explosion sounds. (Atari explosions are deep and resonating with a definite force behind them!) Finally, they didn't like the "goofy little knobs" that Apple calls game paddles. (Atari owners love their joysticks.)

Needless to say, I decided that if the program was to do well as an Atari version, it would have to use a FEW of the features of that machine. But, during the conversion, I discovered that ALL the sophisticated hardware features of the Atari are useful! Cytron Masters uses the separate *sound processor* and *four voices* to make truly impressive sound effects (at least as compared to the Apple); it uses the *Display List* and *Display List Interrupts* to change colors on the fly, and have character graphics, four-color text as well as hi-res graphics on one screen; it uses *Player/Missile Graphics* for additional colors and fast animation; and most useful of all, it uses *Vertical Blank Interrupts* to allow two programs to (apparently) run at once!

All in all, the Atari is a fantastic game machine! It does have its bad points, such as an overblown (10K) and horribly slow operating system, a BASIC that's more like Apple Integer than Applesoft, and a disk drive that's reminiscent to Apple's cassette in speed and reliability. But, for a game program in machine language that uses its own operating system (as Cytrons does) you can't beat the Atari.

The Atari version of Cytron Masters was definitely an "upgrade" rather than a "conversion"! ■

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ROUTE 80
THE ROAD TO TRS-80 GAMING
Dick McGrath

Welcome back on the Road! For those of you who are just joining us, *ROUTE 80* is your main highway to TRS-80 computer gaming! Sometimes we'll follow the high road directly to main line articles and reviews of games for the TRS-80. At other times, we'll wander down some of the little-used alleys and pathways branching off the main thoroughfare, exploring such out-of-the-way hamlets as peeks and pokes, bits and bytes, and puts and gets. But, always will we remain true to our main compass course. *To provide you with more enjoyment from your TRS-80.*

First, let's take a look at a road map of where we're going in the future of computer gaming.

It is, after all, the time of year for soothsayers to try their hands at predicting the future of our favorite pastime. Practically every new issue of the popular computing magazines carries someone's version of what we can expect during the next year or the next decade in the world of computer games. For what they're worth, let's take a look at some of their forecasts.

Everyone agrees that computer games are just hitting their stride, with greater sophistication and complexity evolving with every new generation of software. This continual evolution is a necessity. Computer gamers are a restless lot, who are never satisfied with the status quo. In a constant search for better products, their expectations rise with every new purchase.

Most of these expectations center around technical innovations. Sound effects and voice synthesis are already part of state-of-the-art programming. Future hardware will undoubtedly produce refinements and higher fidelity in sound production. Greater flexibility in player input can also be expected. First there were keyboards, then joysticks, and in the future... authentic input devices, including steering wheels, foot pedals, aircraft control columns, and even voice-actuated command systems. As hardware capabilities improve, we can anticipate more realistic graphics, including cartoon-like screen animation and video-disk random-access projected visuals. The catch-phrase that pulls all of this together in the far-distant future is *total immersion.* The player will be completely isolated from his surroundings; totally projected into a fantasy world of three-dimensional wrap-around animation, unimpeachable audio reproduction, and total interaction with the game environment.

The more philosophical (and perhaps more realistic) of our crystal gazers reject the role of technological development as the guiding force of the future. They believe that the continued popularity of computer gaming does not depend as much on new technology as on new and imaginative uses of current technology. Computer gaming is here to stay, but just as in music, movies, and other art forms, public taste in computer games undergoes continual change. The successful software producer will be the one who anticipates each fluctuation in the cycle and provides imaginative programs to satisfy each new gaming fad.

This is where the greatest disagreement exists among the experts. Where do we stand right now? Have shoot-em-up, fast-action arcade style games peaked as some believe they have? What about the text-oriented fantasy adventures that they replaced? Are they due for a comeback, or are they hopelessly out of date? Several major software companies are staking their bankrolls on opposite sides of this question. What is my prediction? Well, the next wave of consumer enthusiasm will be lavished on a marriage of the two... Realistic simulation adventures requiring careful strategic planning but which also provide real-time interaction and visual display. Such games could re-create detective mysteries, cops and robbers action, fantasy adventures, tactical military scenarios, westerns, international political intrigue, or even gothic romances!

PROGRAMS BY SUBSCRIPTION

In the last issue, I described one of the subscription program services (Cload Magazine), and promised others in the future. Here are two more from one company. *SoftSide Magazine* has been providing quality programs since at least 1980. They conveniently divide their publication into three segments; one each for the Atari, Apple and TRS-80 computers. They also provide cassette and disk versions of the program listings printed in the magazine. They specialize in rather lengthy adventure-type games, business, utility and specialty programs. Each issue contains three to five programs for each computer. The cassette version is $75.00 a year and disk is $125.00. It is available from SoftSide, 100 Pine Street, Holmes, PA 19043.

The same company also produces *Adventure of the Month*, a subscription service which provides a high quality text-oriented adventure every month. A six month subscription is $29.00 on cassette or $49.00 on disk. This service is available from Adventure of the Month, 6 South St., Milford, NH 03055.

I'll look at another subscription service next time!

PEEKS AND POKES PARKWAY

Let's turn off the main highway for a few moments and examine one of the side streets on our journey. The street sign says "Peeks and Pokes Parkway". The buildings here look modern and very utilitarian, but little used.

Peeks and Pokes give you direct access to computer memory locations. A peek allows you to look at the value stored in a location, while a poke lets you change the value. Peeks are passive little things, but pokes can be dangerous! A poke in the wrong location can set off a chain reaction of undesirable consequences. Fortunately, everything can be set aright by simply rebooting the system. This, unfortunately, will also destroy any programs currently in memory. So, be careful about poking around in places that are unfamiliar!

Peeks and Pokes vary from simple examination of a single stored value to complex subroutines providing fast action full-screen graphics and other esoteric manipulations. We'll occasionally wander this way and pick up some usable programming techniques. Here are a couple of simple things:

Peeks do not work alone. They must be part of a command as *PRINT PEEK*(15360) or A = *PEEK*(15360). To examine a sample of memory peeks, type in this program;

```
10 INPUT "WHAT MEMORY ADDRESS
   DO YOU WANT TO PEEK"; X
20 A=PEEK (X): PRINT A
30 GOTO 10
```

Then input these peek addresses;

293 – **A value of 73 indicates a Model III machine, otherwise Model I.**

14312 – **A value of 63 indicates that a printer is ready, anything over 127 indicates a printer is not attached or not ready.**

14317 – **A value of 255 indicates a tape machine, all else indicates disk.**

Continued on pg. 44

BASIC INFORMATION

NAME:	Andromeda Conquest
TYPE:	Strategy
SYSTEM:	Many
FORMAT:	Disk or Tape
# PLAYERS:	2 to 4
PRICE:	$18.00 to $24.00
PUBLISHER:	Avalon Hill 4517 Harford Rd. Baltimore, MD 21214

ANDROMEDA CONQUEST (AC) is a relatively simple but exciting game for two to four players. You can also play the game solitaire, but it is not as entertaining as interacting with other players. Each player starts with one home star system and uses his resources to build faster-than-light ships to explore and colonize new worlds. As your advancing ships encounter ships or star systems of other players, you must decide whether to attack first or to initiate negotiations with the possibility of forging an alliance.

The best game is the full four-player version which has more possibilities for negotiating alliances, limited intelligence, outright deception, faithful cooperation with your allies (or stabbing them in the back), and seeking revenge against a treacherous ally.

Each player chooses one of nine possible life forms; the program uses his choice to identify the system he colonizes as the game progresses. The object of the game is to be the first to colonize and hold ten star systems. The program randomly generates a map of up to 48 stars, so every game is different depending on the relative location of the players' home systems and the other systems. The non-player systems are initially either uninhabited or held by neutral life forms which are handled by the computer. They cannot build ships, but they may have system defenses which a player must attack and destroy before he can colonize the system.

Each star has a different magnitude (brightness) and resources, while each neutral civilization has a different number of defenses, technology level and "pliability". These factors will influence your decision on whether the system is worth the expense of attacking and colonizing it. If a system has major defenses and few resources, it may not be worth the cost. The number of resource points required to establish a new colony at any system varies for each player—the closer the magnitude is to that of your home star, the cheaper the cost. Further, you have no way of knowing whether the system is neutral or is the colony of another player. If it is a colony, you will surely face reprisals if you decide to attack it. If, on the other hand, you try to negotiate, you give up your advantage of surprise and give the other player valuable time which may be secretly used to reinforce the system or possibly attack you. By announcing your desire to negotiate you must reveal the location of one of your fleets, which gives the other players valuable information about the direction of your exploration.

AC does an excellent job of simulating the "fog of war". Each player enters his orders secretly. The only information you receive about the other players are reports from your ships and from negotiations with allies. If another player secretly destroys one of your fleets or colonizes one of your systems, on your turn you will see that it is missing but you have no way of identifying the aggressor. *It is possible to conduct secret warfare against your own ally even while you are pretending to be loyal.*

Entry of orders is simple and moderately "user friendly". Each turn you use your resources to establish a new colony, if possible, and build new ships or system defenses. Each new colony gives you more resource points on future turns. There are three types of ships: Rama, Echo and Nova. Rama ships are fast and cheap, and are useful for scouting, fighting and escorting other ships. Echo ships can establish new colonies, and they are slow, unarmed and expensive. Nova ships are most expensive, and have medium speed and fighting ability. Nova ships are similar to the "death star" in *Star Wars* in that they can obliterate undefended systems. System defenses are cheap to build but are useful only in the system in which they are built.

After you allocate resources, you issue orders to your fleets for movement and exploration. Then if appropriate, you decide whether to attack or attempt negotiations.

The graphics in this game are minimal, so you will be disappointed if you only like fast, colorful arcade action. This is also a *long* game. A four-player game could last as long as ten hours. There is a save game feature, but, if you prefer short games, this may not be your cup of tea.

If you agree on the following rules modifications, you can shorten the game considerably. Lower the victory objective from ten systems to eight. Setting it any lower than eight might make a dull game because one player might possibly achieve it quickly, without competing with the other players' forces. You can place a reasonable time limit on entering orders; perhaps five minutes. A similar time limit can be placed on all "first contact" negotiations. Subsequent negotiations between allies should also have a time limit, should occur only once per turn, and should only be allowed when a non-ally is entering orders. If all players use paper and pencils to make a rough sketch of the strategic map and keep good records on their fleets and colonies, they can play their next move *before* they get to the console and thereby greatly reduce the length of the game.

Another alternate victory objective condition is to allow a player to win by using his Nova ships to destroy a home system of another player. This adds excitement to the game in several ways. First, it gives you a legitimate reason to build and use Nova ships which are useless in achieving the game's original objective. Second, it can be quite a challenge to analyze all of the available information about the direction of alien fleet movements, location of systems occupied by the same life form, and the territorial ambitions of your allies in an effort to guess the location of a player's home world. If you do have a strong hunch, it can be an exciting "all-or-nothing" gamble to send most of your forces deep into his territory in an attempt to nuke his home planet. Third, if your home system is not near a cluster of eight stars, this alternative may be your only hope for winning. If you are successful in destroying a home planet, under this rule modification the other player is required to announce that he has lost his home planet.

There is a slight advantage in being the first player to move, therefore I

ANDROMEDA CONQUEST
STRATEGIES AND RULES MODIFICATIONS

Floyd Mathews

suggest you draw straws to determine the order of play. Under the original victory objective or under the modified objectives discussed above, it is possible that more than one player could win on the same turn, which does give more incentive for forming alliances.

Strategic planning is fairly simple in AC. The direction of your exploration is largely determined by which star clusters are nearest to your home world. On your first turn you should first identify the eight nearest stars and estimate the distance to each of them. Using all of your resource points, build one Echo ship and send it out unescorted on the first turn. There is a small risk that it may be destroyed before escorts can catch up with it, but it is important to get an early start in the race for colonies. You can only establish one colony per turn, so it is important to plan routes for future Echo ships so that you can reach all eight of the nearest stars as quickly as possible. If you are lucky enough to have eight systems nearby, and no other player's home system nearby, you may be able to win easily without ever fighting another player. In general, you should try to explore toward the corners and edges of the map if at all possible, not toward the center where you are more likely to encounter competition from other players in the later stages of the game.

If the nearest star is only two spaces away, you should build a Rama fleet on turn two and begin attacking its system defenses. With luck, you should be able to establish your first colony on turn two or three. If no alien fleets were spotted on the tactical map during turn one, you might risk gambling again on turn two by sending out a second unescorted Echo ship. By turn three, you should begin building Rama ships. Most of them should be accumulated in one or two large fleets advancing before the Echo ships to scout for the easiest systems to colonize, to attack system defenses, and to intercept and destroy any alien fleets before they get within striking range of the valuable Echo ships. A small number of Rama ships should be sent out singly or in pairs on long-range reconnaissance in order to probe any approaching alien fleets as far away as possible, and to possibly initiate negotiations, even if only for the purpose of gathering information about the other players' intentions and strengths.

If you are unlucky and your home system is not located near eight other systems, you will not be able to win early in the game simply by sending out Echo ships. Instead you must use the more difficult long-term strategy of attacking the "early starters" and hopefully forming alliances with other "late starters". On the first turn you should send out one Echo ship toward the nearest cluster of systems. Then build Rama ships on subsequent turns and accumulate them in one large fleet. They should have a few single Rama ships in front of them to scout for good targets such as unescorted or weakly escorted Echo ships, or to initiate negotiations with other "late starters". If you can develop any strong hunches about the location of another home system, you should consider trying to win by the alternate victory objective. Although this is the more difficult way to win, it may be your only hope. Your scouts can usually identify a home system, as it has resources of ten, the same life form as most of the surrounding systems, eleven or more system defenses, and appears to be centered among and equidistant from numerous alien fleets. As soon as possible, build one Nova ship and send it to join your main battle fleet. When you attack the system defenses of the suspected home planet, you must do it with overwhelming superiority in order to destroy it in one turn. For, if you fail to destroy it on your first attack, the enemy will reinforce that system on his next turn, and you may never be strong enough to take it. On your first attack you must have odds of four-to-one in order to have a fifty-fifty chance of destroying the system in one turn. I recommend odds of at least six-to-one, which will give you a 66% probability of destroying the system in one turn. Obviously, if you have any loyal ally whose order of movement is either just before or just after yours, you might invite him to coordinate his own attack with yours in order to increase the chance that one of you will succeed in destroying the system. If the enemy reinforces the suspected home planet so you cannot get good odds, change your plan and hit one of the weakly-defended nearby systems of the same life form. He cannot afford to strongly defend all of his colonies and, if you continue destroying his colonies, you may be able to prevent him from getting eight.

Your negotiations with other players are the heart and soul of this game. There are only two ways to win in this game, and your negotiating strategy will depend on which victory objective you choose to pursue. If you choose to try to win by getting eight colonies, you really don't need allies to help you. The only thing they could offer you would be peaceful coexistence and a pledge to stay away from your area of planned expansion. But, if possible, you should not risk telling them where you plan to expand. I recommend that you promptly destroy any small scouting forces that intrude into your territory. This will hopefully discourage any further intrusions. If a very powerful fleet enters your domain, you should try to initiate negotiations via the scouting force which first detects it. If he does negotiate, you might suggest that he expand toward another nearby cluster, and offer him your pledge of mutual nonaggression and respect for his territory. Do not reveal any more information than is necessary and, of course, never reveal the location of your home planet. Even if the negotiations are not promising, you may be able to pick up valuable information from him or delay any further advance so you can bring up reinforcements and prepare your defenses.

If your home planet is in a remote location and you choose to try to win by destroying another home planet, you will need loyal allies to have a good chance of winning. You should send out many long-range reconnaissance parties and try to initiate as many negotiations as possible with alien fleets. If you encounter another player who is also in a remote location, it is obviously in your mutual interest to exchange some information and hopefully develop a long range plan for a strong allied attack against a suspected home planet of an "early starter". These negotiations will require a great deal of mutual trust. I therefore recommend that, short of revealing the location of your home planet, you show much more candor than in other negotiations.

It is of course permissible to tell huge lies in this game and later stab your ally in the back, but I do not recommend it. Even a veteran "poker face" will have a rough time maintaining a lie throughout the numerous negotiations in this long game. If, during a negotiation, the other player raises a subject that you do not wish to discuss, I recommend that you simply refuse to discuss the subject at all rather than lie.

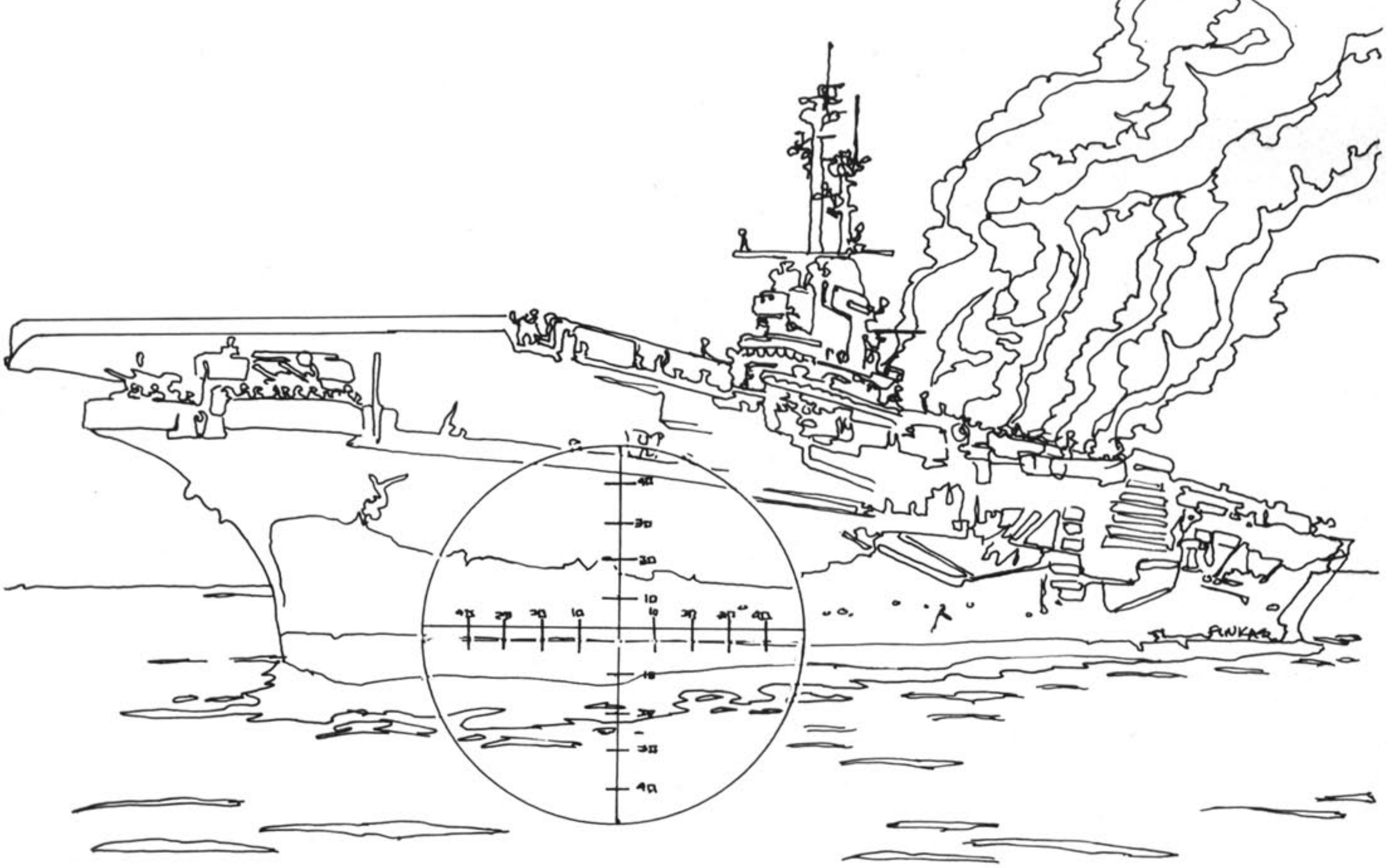
Whether you play straight or slightly slanted, ANDROMEDA CONQUEST can give you hours of gaming enjoyment with your friends.

■

BUNGO PETE AND THE WOUNDED BEAR

Two New Scenarios For TORPEDO FIRE

Bob Proctor



BASIC INFORMATION

NAME:	**Torpedo Fire**
TYPE:	**Strategy**
SYSTEM:	**Apple II or Apple II+**
FORMAT:	**Diskette (DOS 3.3)**
# PLAYERS:	**1 or 2**
AUTHOR:	**John Lyon**
PRICE:	**$59.95**
PUBLISHER:	**Strategic Simulations Inc. 465 Fairchild Dr., Suite 108 Mountain View, CA 94043**

Tired of attacking the same old convoy? Here's a couple of unusual scenarios that you can use to spice things up. Both award victory points for getting off the map, which makes the game more "cat-and-mouse" than when points are given only for damage to the enemy. This results in trading some action for more suspense.

I assume that you know how to use the Shipyard program to create your own scenarios or can figure it out from the shipyard Data Card. Don't hurry this process! Make sure that you get the data entered correctly as it's very discouraging to play for half an hour before you discover a mistake — your sub can't dive deeper than 100 feet or your opponent has a maximum speed of 180 knots.

SCENARIO ONE — *Bungo Pete*

Bungo Suido is the name of the strait between the Japanese islands of Kyushu and Shikoku and is the southern entrance to Japan's Inland Sea. The anti-submarine patrol here gained a reputation among the skippers of ComSubPac as one of the most tenacious anywhere in the Pacific. With a sort of grudging respect, they humanized this unknown enemy with a name, "Bungo Suido Pete" or just "Bungo Pete" for short.

In the scenario from early 1945, a US sub tries to penetrate the Inland Sea. The US player wins if he can exit the map to the north, which means *Y* coordinate of 10,000 or greater (you can make it anything up to 20,000 if you want a longer game). Bungo Pete wins by sinking the US sub; any other outcome is a draw. This game is best with two players but it can be played solitaire. Of course, the computer will not attempt to exit the sub off the north edge. Even so, you may find it a good opportunity to develop your tactics with several escorts.

After choosing the Shipyard program, select period 3 (1944-1945) with 3 Japanese escorts and 1 American sub. Set them up as follows:

Ship-ID		Class (class #)	X	Y	Course
E1	AKITSUKI	(1)	0	1000	180
E2	KAMIKAZE	(3)	-1000	1000	180
E3	MATSU	(4)	1000	1000	80
S1	TENCH	(3)	0	-5000	000

MONSTER MASH



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It is late at night in a monster infested graveyard and you have been given the job of keeping the monsters in. All you have between you and complete chaos is a new MonsterMasher System and quick reflexes.

Monster Mash is an original and unique arcade action game written in assembly language for the Apple II and Apple /// (in emulation mode).

$29.95

This scenario is intended to be a daytime game. It is much easier for the sub player if played at night and this could be done if that person was much less experienced than the escort captain.

SCENARIO TWO —
The Hunt For Wounded Bear

On 8 May 1942, the Japanese aircraft carrier SHOKAKU was heavily damaged in the Battle of the Coral Sea. When US codebreakers learned that this vulnerable and important target would return to Japan by way of Truk, ComSubPac quickly set in motion a plan to ambush her. The damaged SHOKAKU was codenamed "Wounded Bear."

The first phase was to send four submarines to Truk. However, Intelligence overestimated the damage and therefore underestimated her speed; Wounded Bear was safely inside Truk lagoon when the four arrived and was never seen by any of them. When intercepted radio reports indicated that SHOKAKU was on the move again, Pearl warned the USS CUTTLEFISH, then on patrol in the Marianas. But, the Bear didn't put in at either Guam or Saipan and CUTTLEFISH never saw her.

At this point, it began to look hopeless. Pearl ordered subs DRUM and GRENADIER to take up stations off the entrances to the Inland Sea, but these areas were heavily patrolled and subs there were forced to stay under. This made it unlikely that either would spot Wounded Bear and neither did.

One US sub did see her, though, and was the only sub that had a chance of stopping her. USS TRITON was on patrol off Okinawa and her skipper, Charles C. Kirkpatrick (at this time the youngest sub commander in the Pacific), had been listening to all the radio reports. On his own initiative, Kirkpatrick estimated SHOKAKU's track and ran at high speed on the surface to place himself in her path. At 3:20 PM on May 16, he spotted SHOKAKU and a single destroyer heading north at 18 knots. TRITON only had 1 torpedo left in her forward tubes, so Kirkpatrick tried to bring the stern tubes to bear. But SHOKAKU was moving too fast; even after giving chase on the surface, Kirkpatrick could not catch up.

And so Wounded Bear arrived safely in Japan. She was repaired, remanned and returned to the South Pacific. Here's a chance to replay the meeting that might have prevented this. As there are no carriers in *Torpedo Fire*, you must represent SHOKAKU with a tanker. The speed and victory points can be modified to reflect the proper value of a carrier. As for the wounded part, our tanker will only have ten damage points left. This too reflects the absence of a full crew and damage control parties, more than the actual damage to the ship. The TRITON gets full torpedo tubes since there is no way to start with some empty. Admittedly, TRITON has had some things changed to her benefit. To offset this, the Japanese player will be expecting an attack.

The object of this scenario is for the Japanese commander to get SHOKAKU safely off the north edge of the map. In game terms, this means a Y coordinate of 15,000 or more. This is worth twenty points. In other words, the IJN can lose the escort (worth only twelve points, not fifteen as indicated on the data card) and still win the game while the US player must sink SHOKAKU to win.

This scenario makes an excellent solitaire game. Trying to escort SHOKAKU safely out of harm's way can cause nervous exhaustion. Since the computer may put the submarine anywhere, you'll never know whether it is ahead of, or behind you. About 25% of the time, a hard run north will get you off the board without any trace of the enemy. On the other hand, if TRITON is laying in wait, running straight north may result in an easy shot. If you dash north with your Destroyer, TRITON may slip in from the side. The longer you take to move north, the more time TRITON has to get into position. Add to this the very real worry that TRITON may put a fish into you just to get you out of the way and you can see why escort captains turned grey early. Played with two people, TRITON will always get a chance to attack.

Here's how to use the shipyard program to create this scenario. Choose period 2 with two Japanese ships on the surface and one US sub. For E1, the Japanese escort, choose number 2 — a HATSUHARU class DD. Give this ship a starting location of X=50 and Y=3500. Finally, modify its current speed to 18 knots and its course to 350 degrees.

SHOKAKU will be ship T1. Give a location of X=100 and Y=4200. Now modify all of the following fields in the ship data:

Victory points	= 50
Maximum speed	= 18
Current speed	= 18
Course	= 350
Maximum damage	= 10
Current damage	= 10
Surface guns	= 20
Armor class	= 5

If you're wondering why the maximum sustainable damage for a carrier should only be 10, here's the answer. If it were higher (and therefore different than the current damage) the game would award points as if the damage had all been done in the current scenario. Since we don't want to give TRITON points for damage inflicted by YORKTOWN and LEXINGTON pilots, we must set max damage equal to the current sustainable damage.

The US sub should be a GATO class, number 2 on the list. It should be assigned starting coordinates of X=200 and Y=500. The only data field that needs changing is course=090.

Again, this is a daytime scenario. Happy Hunting!

BIBLIOGRAPHY

These two books are highly recommended for anyone who wants to create *Torpedo Fire* scenarios for the Pacific theater:

SILENT VICTORY, by Clay Blair, Jr.; Bantam Books, New York, 1975.

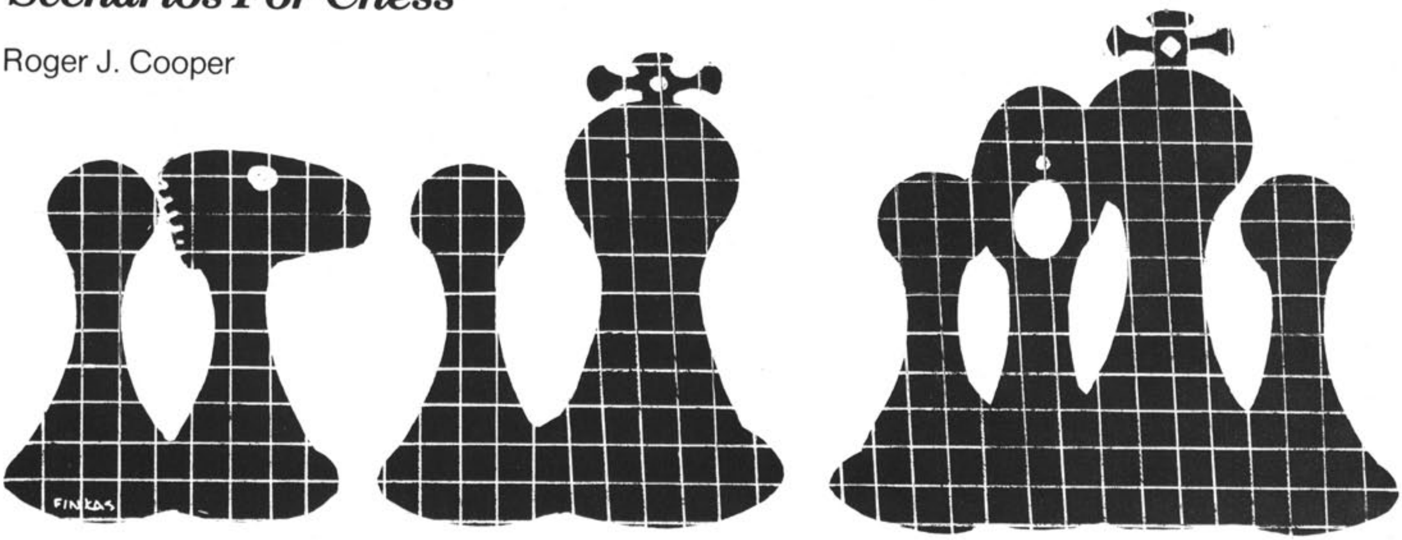
HISTORY OF UNITED STATES NAVAL OPERATIONS IN WWII, by S.E. Morison; Little, Brown and Co., Boston, 1949 (last printing 1975).

There are 15 volumes; for this article, Volume IV, CORAL SEA, MIDWAY AND SUBMARINE ACTIONS was particularly helpful. ■

BEYOND SARGON II

Scenarios For Chess

Roger J. Cooper



The title of this article might seem absurd for after all, how can there be scenarios in chess.

Actually there are many interesting ways to play chess that are not in accordance with the rules of the United States Chess Federation. The setups may be varied, new pieces introduced or even the basic objectives of the game altered.

This article contains chess variants which I have used with *Sargon II* (by Dan & Kathe Spracken, *Hayden Software*). All these variants involve new set-ups as adding pieces with new powers is impossible without changing the program.

POSITION — The most straightforward option is to take a position from a chess book or column. In choosing a position, consider that Sargon is strongest in the middle game and weakest in the end game. You should also keep in mind that positions which are unbalanced in material (e.g. 2 R's for a Q) are often the most exciting.

END-GAME PLACEMENT — Take a small number of pieces (the same for each side). Sargon takes White. Place the pieces randomly on the first 4 ranks of each side. If a piece starts in a threatened square (or if K's adjacent) choose a new location. I have used a K+2P and K+R+P.

16 PAWN — Remove White's Queen. In compensation, he receives extra Pawns at B3, C3, C4, D4, E4, F4, F3, G3. Though by the standard count of material, Black is up "1 pawn" — this position favors White. The extra pawns are played as pieces that have already moved.

PEASANT REVOLT — White starts with his K at E1 and his eight P's, but no other pieces. Black has his K at E8, a P at E7 and N's at B8, C8, F8, and G8. As with previous variant, Black's advantage in the count masks White's strong positional advantage.

THREE PAWN (or Szen's Problem) — White has his K at E1 and P's at F2, G2 and H2. Black has his K at D8 and pawns at A7, B7 and C7.

RANDOMIZED — Set up each player's back rank at random. If the B's start on squares of the same color, one is switched with an adjacent piece.

B&N REVERSED — Switch your B's and your N's starting locations. (*This was actually done in a tournament in 1880!*)

BATTLE CHESS — Set up each side's pieces according to the following rules:

1) All men must be set up on the first three ranks.

2) Pawns may not start on the back rank. If they start on the third, place as having moved.

3) Bishops must be on squares of opposite color.

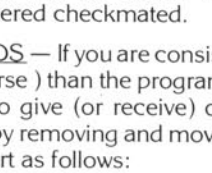
Choose the computer's side randomly *after* setup. (Better yet come up with list of starting positions and choose two at random.) White's first move may *not* be a capture! If Sargon trys it, put the piece back and you make the first move (which may not be a capture).

REBELLIOUS ROYALTY — Place White's K at E8 and his Q at D8. Place black's K at E1 and his queen at D1. All other pieces start in their normal locations.

TWIN CHESS — White starts with his N's at A3 and H3; Q's at D1 and E1 and K's at C1 and F1 (deploy K's as having moved). Black starts symetrically. Either K may be checkmated. If both K's are checked simultaneously, they must both be put out of check or they are considered checkmated.

ODDS — If you are consistently better (or worse) than the program, you might want to give (or receive) odds. This is done by removing and moving pieces at the start as follows:

1. The odds-giver receives Black and removes his P at F7;
2. The odds-giver receives Black, removes his P at F7 and forfeits his first move;
3. The odds-giver receives White and removes his N at B1;
4. The odds-giver receives White and removes his R at A1 (but has his P at A2 displaced at A3);
5. The odds-giver receives Black, removes his R at A8, his P at F7;
6. The odds-giver receives White and removes any two of his B's or N's;
7. The odds-giver receives White and removes his R at A1, and N at B1 (displacing his P at A2 to A3);
8. The odds-giver removes his Q at D1.



As one of the classic games of all time, chess has entertained and challenged us for many years. I hope these computer chess scenarios add to your enjoyment of the game. ■



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*Apple II is a trademark of Apple Computer, Inc.

Micro-Reviews

BASIC INFORMATION

NAME: CRAZY MAZEY
TYPE: Arcade
SYSTEM: Apple II
FORMAT: Disk
PLAYERS: 1
AUTHOR: Ronald Meadows
PRICE: $29.95
PUBLISHER: Data Most
9748 Cozycroft Ave.
Chatsworth, CA 91311
(213) 709-1202

CRAZY MAZEY is a car-chase game in which you drive a ". . .highly maneuverable mean-machine" through a series of mazes collecting money and avoiding collisions with killer cars. The killer cars will attempt to crash into you as you make your way around the maze. Sometimes they will parallel your movement, other times they will dash towards you. The patterns are fairly easy to figure out and knowledge of them will come in handy. To collect all the money (represented by '$' signs) on a level and then exit that level, you will need to neutralize the killer cars. There are two ways to accomplish this: 1) Run them into a dead end; or 2) Cause them to crash into one another. The major challenge of the game involves carrying out these two tasks.

A killer car will tend to parallel your movement. You can use this fact to cause the car to run into dead ends. As long as you do not move to the "unblocked" side of a dead-ended killer car, it will remain there. Causing killer cars to collide with one another involves making use of their other tendency, which is to move toward you when you are on a straight line with them and not moving parallel to their most recent path. There are many ways to use this technique. With one car following you and another heading straight for you, you can wait until the last second before you turn out of the way. Many times the two cars will crash head-on. You can also use the layout of the maze to force cars to crash into each other.

There are nineteen levels in the game. Each level has the same number of cars as the level number. Level nineteen has nineteen cars to avoid! Even at slow speed the higher levels are very difficult. The game can be played at a variety of speeds from '1' (very fast) to '7' (very slow). If you like HEAD-ON you will find CRAZY MAZEY even more enjoyable.

Daniel Hockman

BASIC INFORMATION

NAME: LAZERMAZE
TYPE: Arcade
SYSTEM: Apple II 48K
FORMAT: Disk
PLAYERS: 1
AUTHOR: James D. Spain
PRICE: $29.95
PUBLISHER: Avant-Garde Creations
P.O. Box 30160
Eugene, OR 97403
(503) 345-3043

The information printed on the game jacket bills LAZERMAZE (LM) as a "unique arcade action game" and in this case, the advertising is true. There is no other game on the market like this game. The game is based on the fiction of futuristic 'champion combat'. As in the ancient days of the Greeks and in the biblical story of David and Goliath, LM postulates two warriors competing in one-to-one combat, each representing one of the opposing parties.

The game jacket also claims that LM is a game for sharp eyes and quick wits. This is a fair statement since LM involves rapidly surveying a maze of mirrors on the screen, figuring out the path of a lazer beam through that maze, determining the exit point of the beam, and entering the location into the computer. The more quickly the job is accomplished, the more points you get. The alien is placed at the exit point you select and will be vaporized by your exiting lazer beam if you have correctly called the exit point. If you place the alien at the wrong point and the beam misses him, he will lob a bomb over the maze of mirrors, destroying you. The only real effect of this is that you get zero points for that particular shot.

The rules are stored on disk and are handled nicely. Rather than the usual printed rules or text version of the rules on the computer screen found in most games, the instructions for LAZERMAZE, as well as other Avant-Garde games, are in the form of a tutorial in which the gamer is actually walked through part of a game.

Good eyesight and quick thinking are rewarded. The field of mirrors is fairly easy to "read" on a 13" monitor but is somewhat more difficult on a smaller screen such is oftenused with personal computers. However, the difficulty is not prohibitive. The faster your eyes can trace the path of the beam, the better your score will be. After the completion of a round you may, if your score is high enough, go to another round with more mirrors. More mirrors means more difficult paths. The highest level, Master's, places 70 mirrors on the field. Some of the pathways at the Master's level remind me of my old days in college registration lines — bounce here, there, and everywhere, hopefully coming out at the correct exit.

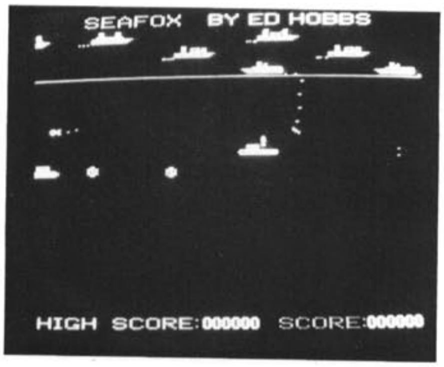
There are not many strategies in the game that will help increase your score. The game is dominated by quick thinking and reflexes, rather than strategies. However, there are a couple of points to keep in mind when playing. First, hit the numbers quickly but avoid the problem of striking the keys too quickly in succession. The second stroke may not register if it follows the first keystroke too closely. The result is that your first key is entered and the computer buzzes you letting you know it is waiting for the second lost keystroke. Second, when you get down to the last couple of shots of a round, the pathways are filled to the point that it is obvious what path a beam will take. You can save a second or two in these final shots by noticing the pathway gaps as well as the exit points of those gaps. Then you can hit the appropriate keys when your figure pops up and the computer requests the next correct pathway.

LM is a different kind of game and for that reason alone is worth looking at. It is a worthy addition to the arcade game field.

Stanley Greenlaw

BASIC INFORMATION

NAME: SEAFOX
TYPE: Arcade
SYSTEM: Atari 400/800 and Apple II (both 48K) Joystick required for Atari
FORMAT: Disk
PLAYERS: 1
AUTHOR: Ed Hobbs
PRICE: $29.95
PUBLISHER: Broderbund Software
1938 Fourth St.
San Rafael, CA 94901
(415) 456-6424



SEAFOX is a shooting gallery game with additions. You are in your sub trying to sink enemy ships as they sail back and forth overhead. The upper row is composed of merchant ships. These are your prime targets. The middle row is made up of hospital ships which you want to avoid hitting, and the lower row (which does not appear in level one) is made up of destroyers that can be fired upon but can drop depth chrages on you. Your sub can move back-and-forth as well as up-and-down. Horizontal movement allows you to line up your shots on surface ships while avoiding depth charges. Vertical movement allows you to avoid, as well as fire at, enemy submarines.

You can fire torpedoes upward (toward the surface ships) or outward (toward enemy subs and other denizens of the deep). If you hit a hospital ship your torpedo will reverse itself and begin diving toward you. It is easy to avoid these returning torpedoes but, since only one vertical and one horizontal torpedo can be in play at a time, the returning torpedo keeps you from firing for a number of seconds. Enemy subs react to you in a limited sense. If you are above them they climb, if you are below them they dive, all the while traveling across the screen. You can use this fact to your advantage when you are firing a horizontal torpedo at a sub (lead him into the shot).

You have limited fuel and torpedo supplies; therefore, you are dependent upon a trained dolphin who will bring you more supplies. There are two problems with getting supplies. First, the dolphin follows a fairly well-established path. If you are not in position, you will miss your supplies (the dolphin is too fast to chase). If you miss a supply dolphin, one more will pass before you run out of fuel. The first dolphin will come when your fuel is in the 500-700 range. The second dolphin will come when your fuel is around 100. The supply dolphin is preceeded by a green sub that travels across the bottom of the screen. When the green sub appears, place yourself about in the center of the underwater zone. From there you should be able to pick off the supplies as the dolphin swims by. The second problem with getting resupplied is the giant clam. Most of the time a giant fast clam (fast clam?) will appear at the same time as the dolphin. It will attempt to eat the supplies. You must get to the supplies first. The clam is also worth points if shot.

Higher levels of the game bring on torpedoes from the enemy subs as well as magnetic mines. The graphics are nice but there are better games in the Broderbund line.

Luther Shaw

BASIC INFORMATION

NAME: Computer Foreign Exchange
TYPE: Business
SYSTEM: TRS-80 models I & III, level II
FORMAT: Cassette
PLAYERS: 2 to 4
PRICE: $20.00
PUBLISHER: Avalon Hill Microcomputer Games
4517 Harford Road
Baltimore, MD 21214

COMPUTER FOREIGN EXCHANGE (CFE) is a computer version of the Avalon Hill board game of the same name. The rules are the same and it relieves the players of all the bookkeeping required in that version. The game is unusual in two ways: it is available only for the TRS-80 and it does not allow you to play against the computer. You can play solitaire only if you play more than one "hand".

Each player represents an American business with international assets. Everything in the game is measured in dollars and the winner is the first player to amass a pre-determined amount. Exactly how great an amount is set at the start of the game and is also a way of controlling the length of the game. Every firm will be making money, so the way to get ahead here is through currency exchange. Say you buy 1000 pesos for $100 on Monday. Friday you sell them back and only get $50. Congratulations, you've just halved your money! Of course, had you done it the other way 'round you could have doubled it. If you're a gambler, you put all you can in a currency you think will go up. If you're conservative, you spread it around so that losses and gains balance out.

The "world" in Computer Foreign Exchange consists of twenty-four cities in nine foreign countries. All cities are assigned to one of the players at random, so, with three players, each would begin with eight cities containing a sales office. The trading of cities is allowed and collecting all two or three cities in a given country means a player can buy a manufacturing firm in that country which will increase your income. Those who are familiar with the board game will be glad to know that Computer Foreign Exchange allows every option, including borrowing.

As a teaching tool, Computer Foreign Exchange is a first class way to learn about exchange rates, exposure, and hedging. It is a realistic simulation that will provide plenty of examples. Unfortunately, the documentation is a bare minimum both in telling you how to play and teaching you about foreign exchange. Once you learn, the game dulls a little for the same reason most Stock Market games do: the "market" is fluctuating randomly. In real life, the people who get rich at currency exchange don't guess.

Still and all, this is a decent game and a good program provided you have someone to play with. The price is right and it only takes 16K!

Bob Proctor

PLEASE TAKE TIME TO FILL OUT READER INPUT DEVICE
p. 47

EASTERN FRONT (from p. 22)

52 Panzer Corps	72	33 ($21)
44 Infantry Corps	122	38 ($26)
55 Infantry Corps	77	39 ($27)
6 Finn Inf Corps	101	48 ($30)

You must also change sector 111 ($6F) from 28 to 29 ($1C to $1D) to avoid the conflict of having two units in the same square if you decide to include the 39 Panzer Corps, above.

You may also include this unit by changing the 255 ($FF) to 2 in sector 118 ($76):

27 Infantry Corps	97	50 ($32)

RUSSIAN REPLACEMENTS

To reduce the Russian replacement rate from two combat strength points per turn to one, change sector 105 ($69) as follows:

BYTE:	CHANGE TO:
121 ($79)	254 ($FE)
122 ($7A)	62 ($3E)
123 ($7B)	85 ($55)

FINNS CAN ATTACK

To enable the offensive capacity of Finnish units, change sector 101 ($65) as follows:

BYTE:	CHANGE TO:
22 ($16)	255 ($FF)
26 ($1A)	255 ($FF)

These bytes should originally be 42 and 43 ($2A, $2B), respectively.

TERRAIN

To alter the terrain as described above, change sector 162 ($A2) as below. Other terrain changes are possible; examine the source code listings for a complete description.

Unit:	Terrain:	Weather:	BYTE:	CHANGE TO:
Infantry	City	Dry	60 ($3C)	08 ($08)
Infantry	Mtn/Forest	Mud	79 ($4F)	20 ($14)
Infantry	City	Mud	80 ($50)	12 ($0C)
Armor	Mtn/Forest	Mud	89 ($59)	25 ($19)
Armor	City	Mud	90 ($5A)	16 ($10)

DEFENSE VALUES

To change the defense ratings of terrain as described above, change sector 188 ($BC) as follows:

TERRAIN:	BYTE:	CHANGE TO:
CLEAR	111 ($6F)	1 ($01)
SWAMP	116 ($74)	3 ($03)

You can easily alter the game length to any time you see fit by changing sector 170 ($AA), byte 51 ($33). It is 40 ($28) in the original version. I find that 52 ($34) turns make it more interesting.

EASTERN FRONT is an excellent game that lends itself well to the tinkering of software scenario buffs. I hope to create a scenario for 1942 one day when I have time. With luck, someone will get as enthused about the game and do it for me! The system lends itself very well to other wargames; a Western Front game perhaps, or even a Yom Kippur War scenario. Obviously, changes would need to be made to the core algorithms, but Crawford has provided us with a vehicle for growth and expansion should we take him up on it. ■

STAR MAZE (from p. 26)

search of the jewels. Beyond the obvious use of thrusters to change direction, there is the technique of bouncing your ship off the blocks as in a game of pool. This conserves fuel, and with a judicious thrust at appropriate points, you can intentionally hit or miss certain blocks so as to change or not change your flight trajectory. Sometimes it is helpful to get the ship going at a high rate of speed, allowing it to bounce randomly around the maze, looking for jewels. A finger can be kept poised over the hyperspace key or the antimatter bomb key. When you pass a jewel you can either mentally note its location or stop and pick it up. When you find yourself hurling at high speed at an enemy unit you can avoid a ship-destroying collision by either hitting the hyperspace key (which transports you to another part of the maze) or you can hit the antimatter bomb key (which destroys all enemy units on the screen, ala *Defender*).

The high scores are saved on disk and the visual display for the "Highest Score To Date" and "Great Score" (for a score in the top six) is pleasing. Unfortunately SM has been known to erase the high scores from time to time for no reason. The disk this review is based on has erased the high scores three times. CGW has heard of other SM disks that have done the same thing.

SM can be played using a regular joystick, an Atari joystick (in conjunction with Sirius Software's joyport), paddles, or keyboard. The game is easiest to play with the Atari joystick, but regular joysticks are also quite good. Previously mentioned problems aside, STAR MAZE is a well-designed game that should provide you with many hours of enjoyable game playing. ■

ROUTE 80 (from p. 33)

We'll explore more of Peeks and Pokes Parkway in the future. You can save that little program if you want. We'll use it again.

EASY STREET — THE PLACE TO MAKE A BUCK!

This is a neighborhood that is strictly for fun: with occasional prizes as well! This month we have a contest for fantasy adventure and simulation buffs. List the names and authors of the ten programs containing the following:

1. Possum Hollow to Knawbone;
2. Paul Bunyon's Magic Axe;
3. Guide is Ingtemba Gombu;
4. Double Eagle II;
5. Clipper Flying Cloud;
6. Guido and Fido;
7. A difficult dumb waiter;
8. Elder Brother Cooks, The Money Lender;
9. The Ghost of Backpack Sam;
10. Pirates, a Mongoose and a Parrot.

Send your list of answers to:

Dick McGrath
2008 Calle Miranda,
Fullerton, CA 92633

The winner will receive a $25.00 gift certificate from Joe Broderick of The Software Affair, 10127 E. Rosecrans Ave., Bellflower, CA 90706.

NOTE: In the event of duplicate correct answers, a winner will be selected by a random drawing from among the correct submissions. All lists must be received by **December 31, 1982**.

That's the end of the road for now. I'll see you again next issue. . . ■

ROBOTWAR TOURNAMENT

CGW is sponsoring its Second Annual Robotwar Tournament (using Muse Software's ROBOTWAR). Detailed instructions can be found in our previous issue (Sept.-Oct. 1982). Deadline for entries is DECEMBER 10, 1982. For more information call or write us:

COMPUTER GAMING WORLD
ROBOTWAR TOURNAMENT
P.O. BOX 4566
ANAHEIM, CA 92803-4566

REAL WORLD (from p.16)

Every personal computer on the market has a random number generator built into it which can create millions of outcomes over a continuous range (usually 0 to 1). So, why are game developers still thinking in terms of discrete outcomes and percentage probabilities? Maybe it's because game developers come from the ranks of game players and the "secrets" of computer simulation have been kept by scientists and engineers.

One "secret" that can be effectively used in many simulation games without any trouble is the "normal distribution". This is frequently represented as a "bell-shaped curve". Numerous things in life fit this curve. The classic example is the height of adult males which ranges from about four feet to almost eight feet with the average being five feet eleven inches. In a normal distribution the average value will occur most often. Thus, there are more men 5'11" than any other height. However, each height within the total range has a given probability of occurring. If we really wanted to, we could derive the "discrete" probability for each height that can occur. Simply dealing with one inch increments between four and eight feet, we would have 48 outcomes with probabilities for each. It would be an impossible job to maintain tables of all possibilities, but a feature of normal distributions makes this quite unnecessary. To describe a true bell-shaped curve, you only need two numbers: the average and the standard deviation. With these two values you can recreate each probability in the entire range of outcomes. As it turns out, you can also use a random number generator to create normally distributed outcomes. Although it means jumping ahead a bit in terms of our phases of game development, here is a simple routine that will turn a uniformly distributed random number (each outcome in the range is equally likely) into a normally distributed random number (the average is most likely and outcomes taper off to either extreme). This little routine will work in either Atari or Applesoft BASIC:

```
A = 0: FOR I = 1 TO 12: A = A +  RND(1): NEXT I: A = A - 6
```

This routine will make *A* a normally distributed random variable that takes a value of zero most often and very rarely reaches as high as +6 or as low as -6. If you multiply *A* by the standard deviation of your collected data and add your calculated average then you will have an outcome that fits your observed system.

There are three major advantages to using normally distributed outcomes in simulations. First, the calculations required of your data are easily done (many calculators have features for computing averages and standard deviations built into them). Second, the variables you need to store in your program are considerably reduced from the alternative of using discrete outcomes. For instance, the simple discrete yard generator used in the football example above needed five elements per combination of offense and defense. Only two elements are needed if a normal distribution is used. Finally, the outcomes that you generate using a normal distribution will have the "ring of truth" to them. The average outcome will happen most often and the farther away from that point you get, the less likely the outcomes will be. But occasionally, as in the real world, a "really great" (or "horrible" depending whose side you're on) outcome will occur. That's as it should be.

Normally distributed outcomes can't be used everywhere. For example, the decision as to whether a pass is complete or not in football is a discrete probability. There are, in addition, a number of other types of distributions that exist in the world. The probability a warrior will be killed in hand-to-hand combat based on his fatigue, for instance, would look entirely different from a normal curve. If, for each doubling of fatigue, the chance of death would then be quadrupled, this would fit what's called a power curve. There are numerous other types of distributions and curves (some of which I will cover in future issues given enough reader interest), but the normal one is the easiest to use and greatly simplifies your data collection. A normal distribution should be used in your game any time the most common outcome is near the middle of a range and the frequency of outcomes on either side of the middle becomes increasingly unlikely.

As for data collection that does not fit a "known" pattern, just keep your objective in mind. *You want to be able to reduce your findings down to mathematical relationships.* So, if you discover a nonstandard pattern to the data that seems to fit fairly well, don't be afraid to use it. Often you can bypass the whole data collection process if you use a few standard "rules of thumb". For instance, it is someone's principle (I don't remember his name) that in business, each time a company doubles their production, they lower their costs by 15%. In a business strategy game, little "gems" like that can save a lot of wear and tear on the calculator.

Next issue — Model Development.

■

LEGIONNAIRE (from p.30)

# Legions	Barbarian #	Score	Composite
10	3	35	1050
10	2	50	1000
5	7	−27	—
5	6	2	60
5	3	31	475
2	8	8	128
1	8	12	96

There is a fine balance between playability and historical accuracy that is very difficult to reach in war game creation. I have two friends who play war games. One won't touch a game that doesn't have complete designations on each cardboard marker. He'll pause in the middle of a move to reflect on some historical incident in that game and alter his strategy accordingly. My other friend tried LEGIONNAIRE and found the game fascinating. When I tried to explain why a piece would all of a sudden become weak and run away from a battle with discussions of shock factors and morale, he ignored me. LEGIONNAIRE tends toward the latter of my two friends as a game that anyone can sit down and play without reading endless instructions or learning complex strategies. The historical gamer may be appalled at finding the *Huns* fighting *Caesar*, but he'll be more than compensated by the logical and realistic procedures he will have to adopt to successfully play the game. The real time action in this game is my favorite point. When I sit down to play, I know I'll only be at the computer for an hour at the most, and that I won't have to sit through twenty-minute brainstorming sessions between moves.

I consider LEGIONNAIRE to be as challenging as **EASTERN FRONT** and immensely more playable. The only other Atari game I have played that is similar (besides EASTERN FRONT) is **SHATTERED ALLIANCE**. There is little comparison. Chris Crawford has shown what can be done on the Atari in only 16K. Imagine what will happen when some programmer undertakes a machine code, 32K, disk accessing, full color, full sound, scrolling, multi-character set, player missile graphic, sophisticated wargame on the Atari. It's coming and LEGIONNAIRE and EASTERN FRONT are breaking ground. When Avalon Hill merges their knowledge of game design with the Atari's full capabilities, we should see some very good headway made towards sophisticated, playable simulations. I have no complaints about LEGIONNAIRE other than I'd like to be able to scroll around a bit faster to rescue my poor distant legions. I hope Chris takes the LEGIONNAIRE format, expands the map, adds random terrain generation, moves it into the gunpowder era, and adds a two-player option. I think he should be able to give us this in a month or two. Don't you? ■

WRITING FOR COMPUTER GAMING WORLD

Almost all of the articles in CGW come from active readers of the magazine. We invite your submissions of articles, art, humor, etc. CGW pays two cents per word for most copy and $30.00 per page for most artwork. Artwork for less than a page will be pro-rated.

REVIEWS

The majority of articles in CGW will be reviews. These will fall into two categories: 1) *micro-reviews* of 300 to 600 words; and 2) *feature reviews* of about 1000-2500 words. *Micro-reviews* should contain the following: 1) The information which goes into the Basic Information Box (see this issue); 2) General description of the fiction/background of the game; 3) A more detailed description of the graphics, documentation, and above all the game design itself. Refer to **READER INPUT DEVICE** on pg. 47 to see the kinds of questions a review should answer; 4) A discussion of the strong and weak points of the game. Remember that computer gamers have wide ranging tastes and a game which is "poison" to one may be "meat" to another. The strengths and weaknesses you find should be those of the game, not the game type; 5) A summary of the game which might suggest what type of computer gamer will want to buy this game and/or what type of gamer will want to pass it by; 6) If possible include a good photograph (color or b/w) of the game ($5.00 is paid if the photograph is printed). To get rid of monitor screen "phasing" in the photograph you must not use a shutter speed faster than 1/30th of a second.

A micro-review cannot cover most games in detail but can: 1) give an overview of the game to a potential purchaser; and, if appropriate, 2) suggest some strategies for playing the game well. Any game released in the last 12 months is acceptable for a micro-review.

A *feature review* will do everything that a micro-review does but on an expanded scale. The subject of a feature length review should be a new game (released in the last 12 months) or one that has become a "standard". When appropriate CGW will print reviews of books, hardware, etc. as they relate to the computer gaming field.

STRATEGY AND TACTICS

While many reviews will contain suggestions on strategy and tactics, we also welcome articles which are *primarily* strategy/tactics oriented. This type of article will go into detail concerning what techniques provide high scores or help a player better attain the goal of the game. In general, clues to adventure type games should rarely be included. Where they are included they should be in slip code (i.e., shift the letters of the sentence one letter to the right or the left).

SCENARIOS

Formal and informal scenarios can be designed for some computer games. A formal scenario is one which uses the scenario designing routine of the game such as SSI's Torpedo Fire. An informal scenario is one in which the writer makes up an alternate goal for a game with success being determined independently of the game's stated scoring system. An example would be the "*Castle Wolfenstein Dash*" in which a point is awarded for each room entered minus one point for each guard killed. The *Operation Apocalypse Campaign Scenario* in 2.2 is another example of an informal scenario.

REGULAR DEPARTMENTS

CGW is always looking for other quality additions to our regular list of departments. If you have a column idea that you would like to submit to CGW please write or call.

Several of our regular departments are written by authors who would like to have dialog with our readers. If you have a comment or idea for their column, drop them a note. Here are those who are looking for reader input:

SILICON CEREBRUM	— Bruce Webster 6215 Thorn St., San Diego, CA 92115
REAL WORLD GAMING	— Dan Bunten 108 Broadmoor Little Rock, AR 72204
ROUTE 80 (TRS-80)	— Richard McGrath 2008 Calle Miranda Fullerton, CA 92633
MICROCOMPUTER MATHEMAGIC	— Michael Ecker Luzerne 8 Viewpoint Village Scranton, PA 18508

DESIGNER'S NOTES

CGW urges game designers to submit *designer's notes* articles on their games. Contact us if you have any questions.

FICTION AND HUMOR

From time to time, CGW will print fiction related to the computer gaming field. Humor will be included on a regular basis if quality material is submitted.

FORMAT

Article submissions should be typed. The manuscript should be at least double-spaced and preferably triple-spaced with a one inch margin all around. Please try to avoid all-upper-case printing. For the sake of our editors, please double-check both grammar and punctuation. Be sure your name, address and phone number are typed on the first page. Include a SASE for return of unsuitable material.

RIGHTS

All submissions become the property of Golden Empire Publications, Inc., rights revert to author upon publication or rejection. Specifically, our purchase covers first world rights.

Reader Input Device

OVERVIEW OF R.I.D. #4

There were 125 Reader Input Devices turned in by press time for this issue. The breakdown by machines owned is as follows: Apple (53%); Atari (34%); TRS-80 (7%); IBM PC (6%). Of the 22 games offered for evaluation in RID #4, 15 of them received enough responses to be listed. If a game is not reviewed by at least 20% of the user group(s) to which it belongs, we do not believe the statistics gathered can be considered significant. Please note that this 20% threshold is a change from the 10% threshold we used for RID #3. Games that were not evaluated by at least 20% of the appropriate group were: Computer Gin Rummy; Battletrek; Fore!; and Zero Gravity Pinball.

In an effort to make it easier for you to evaluate the games, and because most of us tend to only take note of the composite score of a game, we have decided to do away with rating multiple aspects on each game. From now on (unless there is a revolt of semi-gargantuan proportions) we will only ask for and report a single score for each game — from 1 (terrible) to 9 (outstanding). Therefore, even though we collected detailed ratings in RID #4, we will only report the composite scores.

THE RANKINGS

GAME	PUBLISHER	COMPOSITE RATING	% PLAY
1. GUADALCANAL CAMPAIGN	SSI	7.78	30
2. ESCAPE FROM RUNGISTAN	SIRIUS	7.69	21
3. GALACTIC GLADIATORS	SSI	7.57	28
4. STAR BLAZER	BRODERBUND	7.36	51
5. CYTRON MASTERS	SSI	7.25	25
6. ZORK II	INFOCOM	7.11	21
7. ULTIMA	CAL. PACIFIC	6.95	49
8. RASTER BLASTER	BUDGE	6.75	83
9. A2-PB1 PINBALL	SUBLOGIC	6.59	43
10. CANNONBALL BLITZ	ON-LINE	6.27	49
11. HI-RES COMP. GOLF	AVANT-GARDE	6.26	30
12. SNACK ATTACK	DATAMOST	6.20	49
13. SERPENTINE	BRODERBUND	6.13	23
14. INVASION ORION	EPYX	6.08	38
15. FALCONS	PICCADILLY	6.03	47

The top rated game in RID #4 was SSI'S GUADALCANAL CAMPAIGN. It showed a relatively high percent played (30%) considering that it has only been out a few months. In comparison to the results of prior RIDs, RID #4 had an overall strong group of games. Even the lowest rated game, FALCONS, received a respectable 6.03 rating (the same rating as the 11th game of 20 in RID #3 — The Temple of Apshai).

At 83% the game most played in RID #4 was a runaway —RASTER BLASTER. This "old timer" was included in order to compare pinball games (see pg. 48).

COMPUTER GAMING WORLD TOP 10

Last issue we initiated the CGW TOP 10. The games on this list will be the ten highest rated games from the various RIDs. As with the regular RID list, a '% played' rating of at least 20% will be necessary to make a game eligible for the TOP 10. In our last issue PURSUIT OF THE GRAF SPEE made the TOP 10 with only '12% played'. With our new required level POTGS is disqualified from the TOP 10. To be fair we will include it in RID #5.

COMPUTER GAMING WORLD

TOP 10

THIS ISSUE	LAST ISSUE	GAME	PUBLISHER	RATING
1.	1.	WIZARDRY	SIR-TECH	8.25
2.	2.	COMPUTER BASEBALL	SSI	7.80
3.	3.	OLYMPIC DECATHLON	MICROSOFT	7.79
4.	—	GUADALCANAL CAMPAIGN	SSI	7.78
5.	4.	CHOPLIFTER!	BRODERBUND	7.71
6.	5.	SOUTHERN COMMAND	SSI	7.71
7.	—	ESCAPE FROM RUNGISTAN	SIRIUS	7.69
8.	6.	KNIGHT OF DIAMONDS	SIR-TECH	7.66
9.	—	GALACTIC GLADIATORS	SSI	7.57
10.	8.	RENDEZVOUS	EDU-WARE	7.53

Since our hobby is changing so fast and games come and go more quickly than new T.V. shows, we have decided that beginning with this issue, the TOP 10 must be re-evaluated each issue along with the regular offerings for that issue. The ratings for some of the games in the current TOP 10 were based on responses from RID #2 and RID #3.

R.I.D. #5

(use business reply card)

GAMES

Rate the following games using a scale of 1 (terrible) to 9 (outstanding). In making your evaluation be sure to consider the following aspects of the game: PRESENTATION (this includes such things as graphics, sound, packaging, documentation); GAME DESIGN (apart from the presentation, is the game well designed, playable, interesting?): LIFE (does the game wear well?).

1. WIZARDRY (SIR-TECH)
2. COMPUTER BASEBALL (SSI)
3. OLYMPIC DECATHLON (MICROSOFT)
4. GUADALCANAL CAMPAIGN (SSI)
5. CHOPLIFTER! (BRODERBUND)

6. SOUTHERN COMMAND (SSI)
7. ESCAPE FROM RUNGISTAN (SIRIUS)
8. KNIGHT OF DIAMONDS (SIR-TECH)
9. GALACTIC GLADIATORS (SSI)
10. RENDEZVOUS (EDU-WARE)
11. THE ARCADE MACHINE (BRODERBUND)
12. STAR MAZE (SIR-TECH)
13. ANDROMEDA CONQUEST (AVALON HILL)
14. SHAMUS (SYNAPSE)
15. ATTACK AT EP-CYG-4 (BRAM)
16. COMPUTER FOREIGN EXCHANGE (AVALON HILL)
17. SEAFOX (BRODERBUND)
18. LEGIONNAIRE (AVALON HILL)
19. FRAZZLE (MUSE)
20. STAR TRADERS (HAYDEN)
21. ESCAPE FROM VULCAN'S ISLE (EPYX)
22. CRYPT OF THE UNDEAD (EPYX)
23. KING ARTHUR'S HEIR (EPYX)
24. FROGGER (SIERRA ON-LINE)
25. FINAL CONFLICT (HAYDEN)
26. PURSUIT OF THE GRAF SPEE (SSI)
27. THE COSMIC BALANCE (SSI)
28. S.E.U.I.S. (SSI)
29. COMPUTER GIN RUMMY (DATAMOST)
30. FORE! (EPYX)

ARTICLES

Rate the following selected articles on a scale of 1 (terrible) to 9 (outstanding). If the article does not interest you enter "0".

31. HISTORY OF A WARGAME DESIGN
32. SILICON CEREBRUM
33. REAL WORLD GAMING
34. JAPANESE STRATEGY IN GUADALCANAL
35. FOUR FOR THE ATARI
36. EASTERN FRONT SCENARIOS
37. MICROMATHEMAGIC
38. BEYOND SARGON II
39. LEGIONNAIRE: REVIEW AND ANALYSIS
40. ROUTE 80
41. ANDROMEDA CONQUEST SCENARIOS
42. BUNGO PETE/WOUNDED BEAR

A. What was the single most important game release and/or occurence in the computer gaming hobby and industry in 1982.

B. What was the prime reason you purchased a personal computer (e.g., entertainment, business, etc.)

C. Other comments

PINBALL GAMES COMPARED

DAVID'S MIDNIGHT MAGIC received a 7.24 composite/43% played rating in RID #2. We ran some other pinball games so as to compare. The result? RASTER BLASTER (6.75/83%) and A2-PB1 PINBALL (6.59/43%) were no match to DMM. ZERO GRAVITY PINBALL only received a 3.88 composite in RID #4 but this score must be considered suspect in light of the fact that it was only evaluated by 11% of the Apple respondents.

U.S. POSTAL SERVICE
STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION
(Required by 39 U.S.C. 3685)

1. TITLE OF PUBLICATION: Computer Gaming World
A. PUBLICATION NO: 0 7 4 4 6 6 6 7
2. DATE OF FILING: 10-1-82
3. FREQUENCY OF ISSUE: Bi-monthly
A. NO. OF ISSUES PUBLISHED ANNUALLY: six
B. ANNUAL SUBSCRIPTION PRICE: $11.00
4. COMPLETE MAILING ADDRESS OF KNOWN OFFICE OF PUBLICATION (Street, City, County, State and ZIP Code) (Not printers): 1919 E. Sycamore #203 Anaheim, CA 92805 Orange Cty.
5. COMPLETE MAILING ADDRESS OF THE HEADQUARTERS OR GENERAL BUSINESS OFFICES OF THE PUBLISHERS (Not printers): Same
6. FULL NAMES AND COMPLETE MAILING ADDRESS OF PUBLISHER, EDITOR, AND MANAGING EDITOR (This item MUST NOT be blank)
PUBLISHER (Name and Complete Mailing Address): Russell Sipe 1919 E. Sycamore #203 Anaheim, CA 92805
EDITOR (Name and Complete Mailing Address): Same
MANAGING EDITOR (Name and Complete Mailing Address): Same
7. OWNER (If owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding 1 percent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a partnership or other unincorporated firm, its name and address, as well as that of each individual must be given. If the publication is published by a nonprofit organization, its name and address must be stated.) (Item must be completed)

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2. MAIL SUBSCRIPTION	797	875
C. TOTAL PAID CIRCULATION (Sum of 10B1 and 10B2)	3117	3428
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PS Form 3526, July 1981 (See instruction on reverse) (Page 1)

CIRCULATION FIGURES ARE BASED ON THE FIRST MAILING OF THE JULY—AUGUST 1982 ISSUE.

You're Trapped with The ALIEN



ALIEN is ready to run on your APPLE II or II + with 3.3 Disk Drive, 48K memory and Applesoft in ROM. One Paddle Controller required.

$28.00

ALIEN is a game where you are put in command of a starship with a stowaway alien of unknown powers. It is up to you to capture, or if that is too dangerous, to slay the alien. The alien can be detected on your sensor screens, but many of the lab animals also escaped in the initial confusion, and your sensors cannot tell the difference between the life form readings. Under your command are the crew, with their special capabilities and skills. The alien is a deadly foe, and will metamorphose to more and more deadly forms as times goes on, so it is imperative to subdue it as soon as possible. As a final act of desperation, it is possible to self destruct the ship and escape in the shuttles.

In ALIEN, victory depends on careful planning and thought. Each crew member moves and acts separately, and only if you can learn to use your crew and their talents cleverly can you hope to defeat or capture the alien. While you attempt to capture lab animals, arm your crew, build weapons and search the ship, the alien will be stalking your crew and gaining strength. Good luck! (you will need it)

